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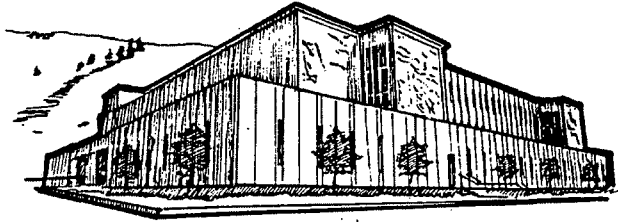
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University of  
**Montana**

The Status of Environmental Education  
in the Public Schools of Montana

by

Ann Swisher Palen

B.A., University of Montana, 1981

Presented in partial fulfillment of the requirements

for the degree of

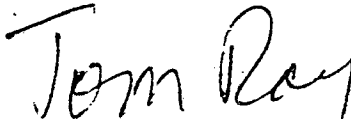
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in Environmental Studies

University of Montana

1991

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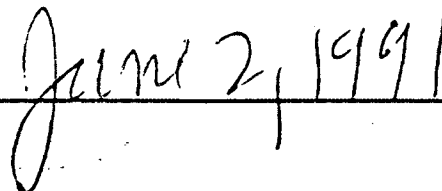


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Palen, Ann S., M.S., June 1991

Environmental Studies

The Status of Environmental Education in the State of Montana  
(97 pp.)

Director: T. R.  
Tom Roy

Environmental education is needed in the public schools of Montana to develop a citizenry which is knowledgeable about the biophysical environment and its associated problems, is aware of how to become effectively involved in working toward acceptable management of the states natural resources as well as global environmental management, and is motivated to do so. There is a need to have documented evidence to determine the nature and extent of environmental education in Montana, in order to determine the best way to further foster environmental education in the state.

This study conducted a survey among all public high school principals and superintendents in Montana to determine the status of environmental education in the state, who teaches and plans environmental education and what their training is, if environmental education is, in fact, a priority "non-basic" subject for administrators and to explore what the weaknesses are in implementing environmental education.

The study found that a majority of public high schools do have environmental education of some sort but that students average less than one hour per week on it. Most students receive environmental education in their regular science classes, taught by teachers who are not trained in environmental education, and planned by the same teachers. While administrators believe it is important to have teachers trained in environmental education, few are. Obstacles to environmental education, as perceived by administrators, were funding, a lack of teacher training, and a lack of room in the curriculum.

This study concluded by suggesting additional state funding, the provision by the state and individual schools of incentives for teachers to obtain training in environmental education, and that an integrated, interdisciplinary approach should be adopted by all public schools in Montana, perhaps in the form of a state-wide environmental education curriculum.

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There was a child went forth every day  
And the first object he looked upon,  
that object he became ...

- Walt Whitman

## CHAPTER ONE

### Introduction

As the environmental and ecological degradation of the earth becomes more obvious and more dangerous, education about the problem becomes more imperative. In the last two decades attention towards, research about, and implementation of environmental education has increased in public schools. (Hammerman and Voelker, 1987) Though a relatively new addition to school curricula, the current trend has been backed by more than 50 years of research, writing, and practice related to learning connected with the out-of-doors. This curricula related movement has been implemented and evaluated in different parts of the U.S. (Cook, 1982)

Environmental education is an interdisciplinary approach for improving knowledge of the environment and the human relationship to it. (Tewksbury and Harris, 1982) The State of Virginia Department of Education called environmental education "the study of the relationship of man to his environment, what he needs from it, what he contributes to it, and how his actions affect it." (Pettus and Schwabb, 1979)

The Environmental Education Act of 1970 created more federal attention, funding, and recognition for teaching and learning about the out-of-doors, environment, and conservation. Environmental education has existed in a variety of forms and degrees including classroom lessons,

outdoor field trips, and visits to residential outdoor and/or environmental education centers. (Cook, 1982) However, three surveys in the United States directly suggested that further planning, research, and support, to ensure that environmental education is practiced, is still strongly needed. (Pettus and Schwabb 1979; Tewksbury and Harris, and Tuller, 1989)

Much of the support and methodology for environmental education has come from the popular field of outdoor education. Outdoor education has been a valued educational program for more than 50 years. (Hammerman, 1980) Besides the promotion of outdoor education and the concerns of environmentalists, the Environmental Education Act helped give environmental education financial and organizational support within the public school curricula. (Cook, 1982)

Today, appreciation of the environment is a part of some Montana public school philosophies. In their district philosophy statement, Great Falls Public School District directly states as one of their goals, the responsibility to help students develop an understanding of environmental problems and society's role in preventing and solving those problems.

The State of Montana is a mostly rural area that contains a large number of small villages and towns. Montana contains high mountain areas, glaciated mountains, forests, wetlands, fertile valley plains, grasslands, deserts and large

watersheds. There are many and diverse sections of land controlled by both state and federal agencies set aside for conservation purposes. Among these diverse land use areas are sections designated for recreational use, wilderness, national parks, state parks, and wildlife preserves. In the lower 48 states, Montana ranks second only to California in total acreage designated as wilderness. Due to the great physical size and low population density in Montana, vast areas of land remain undeveloped. This provides habitat for wildlife, permits many clean and unobstructed streams and rivers to flow throughout the state, sets the stage for a wide variety of ecosystems to be found in relative proximity to one another, and makes access, in most cases, available to all. The outdoor and environmental educational opportunities are endless. As well, the environmental threats are high due to the abundance of natural resources.

The state is not immune to the modern day development pressures of housing, industry, businesses, and tourism. Demands on the land and its resources come from industries such as lumber and mining (many of them very large), ranching and farming of all scales, urban development and an increasing interest in Montana for tourism, second homes, retirement and recreational interests such as alpine skiing that have a large impact on the region.

It is in this environ that this study attempted to

assess the status of environmental education in Montana's public schools.

### **Statement of the Problem**

There is a lack of documented data concerning the status of environmental education in the public schools of the State of Montana. In order to improve and strengthen environmental education in Montana's public schools, an assessment of the current status would be invaluable. It is important that a baseline of administrators and teacher perceptions and expectations of an environmental education program, be obtained when planning environmental education programs and facilities for use including public schools. Measurements of the success of current efforts in environmental education can be possible only if initial teacher and principal attitudes and priorities are known.

### **Purpose**

The purpose of this study was to assess the status of environmental education and attitudes of public school principals towards its implementation in the state of Montana. This study also intended to offer recommendations for effective implementation of environmental education in the state of Montana. Finally, this project intended to add to the general body of knowledge about environmental education in this state.

### Significance and Scope

For the purpose of this study, public schools in Montana included all secondary schools in the entire state of Montana. In this state environmental education has been taught in: the public school systems to varying degrees, camps, interpretive and nature centers, and residential environmental/outdoor education centers.

Within the intended survey area fall a wide variety of school sizes and populations. The range is from secondary schools in towns with populations of up to 100,000 to "one-room-school-houses" serving a town of 25. Students come from families that represent the wide variety of interests, often conflicting, that make up the interesting population in the state. What all schools have in common is their easy access to natural environments and undeveloped ecosystems in which to study, recreate, and for many, in which to live. Even the more "urban" school systems have undisturbed natural settings of various kinds 15 minutes from their schools. Not only are all schools surrounded by natural environments but environmental problems and developmental issues affect every single Montanan.

One of the forums for educating citizens about managing environmental decisions has been the public schools. In Montana, public schools are predominantly rural schools. There are 163 public high school systems in this 56 county state, educating approximately 42,747 students. None are

subject to syllabus requirements mandated by the state, but they do closely follow suggested guidelines from the Montana State Office of Public Instruction. Each school district writes its own individual curriculum.

The status of environmental education in Montana is unclear. Several related studies have been done in Montana. (Disinger and Bousquet, 1982; Gundersun, 1989; Light, 1984; Norgaard, 1986) One national study that included Montana (Disinger and Bousquet, 1982) was on the amount of time state curriculum coordinators throughout the nation spent on environmental education. In Montana it was found that one curriculum coordinator was allotted 2 percent of his time for environmental education but in actuality devoted approximately 25 percent of his time. Another study was done to find common factors among outstanding environmental education teachers in Montana public schools. (Gundersun, 1989) Gundersun selected 12 reportedly outstanding environmental educators in the public elementary schools and interviewed them as to why they, in contrast to other educators, were inclined to include environmental education in their classrooms. From these interviews she also developed a list of 14 characteristics that the 12 interviewed teachers agreed should be present in an "ideal environmental education program."

In 1984, Ken Light from the University of Montana, wrote a master's thesis, "Growing With the Earth: A Manual For Mentors." His thesis brought attention to the status of



environmental education in Montana public schools through a series of teacher interviews. He concluded that there is very little environmental education in Montana public schools, and that environmental education is a low priority for administrators. Jim Norgaard (Norgaard, 1986) also found Montana environmental education programs to be weak and offered suggestions for expansion of the programs.

No study has been found in Montana, however, that attempts to assess the status of environmental education in the secondary public schools. In New York State in 1982, Tewksbury and Harris surveyed four counties of public schools concerning the integration of environmental education at all grade levels. Similar to a study of Virginia public schools (Pettus and Schwabb, 1979), Tewksbury and Harris found that environmental education did exist but very little time was spent on it (usually less than one hour per week where it was provided). They also found that environmental education was provided more at the elementary levels and at smaller schools (0-800 pupils). They found that environmental education was oriented to factual science and mainly focused on awareness of environmental problems as opposed to problem solving. In addition, Tewksbury and Harris found that in the four counties that their study surveyed, 27 percent of the schools were not providing any environmental education, thus not complying with recommendations of the state of New York.

In a study conducted by McCaw on Ohio public high

schools, environmental education was ranked fourth behind music, art, and sports in terms of priorities for funding and time, regarding "non-basic" parts of school curriculum. In the same study, regarding in-service teacher training, McCaw found that the majority of teachers were, at the same time, interested in training in environmental education. He also found that elementary teachers were more interested in environmental education than secondary teachers. (McCaw, 1980)

Following these and other similar studies done on environmental education, it was the intent of this study to develop an information base concerning the status of environmental education in Montana.

### **Assumptions and Limitations**

Several basic assumptions and limitations were considered in the procedures of this study. They were as follows:

#### **Assumptions**

1. Cited research provided an accurate base of information for this study.
2. The opinions and facts expressed in the survey results can provide a resource for future planning of environmental education in Montana.
3. The researcher's bias didn't affect the data collected.

#### **Limitations**

1. There existed the possibility that some individuals responded to the survey device according to a perceived expected response, rather than what was actually the case. This was an expected limitation of the survey instrument.
2. There existed the possibility that the term "environmental education" would deter those not in favor of including environmental education in their curriculum from participating in the study.

### **Delimitations**

The following were the limitations placed on this study by design:

1. The study was restricted geographically by area to the state of Montana.
2. The survey device and the study were restricted in scope to principals of grades 7 through 12 within the public schools of the state.
3. Information requested by the survey device limited the data base of the study.

### **Definition of Terms**

For the purpose of this study, the following terms and expressions were defined as follows:

Environmental education: "The process of the teaching of recognizing values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the interrelatedness among man, his culture and his biophysical surroundings. Environmental education entails practice in decision-making and self-information of a code of behavior about issues concerning environmental quality."

(Definition developed by B. Ray Horn at Northern Illinois University and accepted by UNESCO, 1970, pg. 10, Tuller, 1989)

Outdoor education: The method of using the outdoors as a laboratory for learning. It is an approach towards achieving the goals and objectives of the curriculum that includes (1) an extension of the classroom to an outdoor

laboratory; (2) a series of direct experiences in any or all phases of the curriculum involving natural materials and living situations, which increase awareness of the environment and of life; and (3) a program that involves students, teachers, and outdoor education resource people in planning and working together to develop an optimum teaching-learning climate. (Hammerman, et al 1985, Tuller, pg. 10, 1989)

Public School: A public school, for the purposes of this study, includes grades 7 through 12 in a Montana tax supported public school system.

### Goals

This study had the survey group answer a set of 12 goal questions. These questions were answered using a survey device that combined questions from three previously administered surveys as well as three questions designed by the researcher.

Again, it was the study's intent to use the survey device to have the sample of high school principals and superintendents answer the following goal questions concerning their own high schools.

1. What percent of the surveyed schools have environmental education in their curricula? (Survey question #1)
2. Where environmental education is provided, what is taught and how is it presented? (Survey questions #2, 3, 6, 7a, 7b)

3. Who is involved in the planning of environmental education? (Survey questions #4, 4a)
4. Where environmental education is provided, how much classtime per week is spent on it? (Survey question #5)
5. Where environmental education is provided, who teaches it? (Survey questions #8, 9, 9a, 9b, 9c)
6. Do administrators perceive a need for teachers to receive special training in environmental education? (Survey question #9d)
7. What are the sources of instructional materials for environmental education for public schools? (Survey question #10)
8. How do administrators perceive the adequacy of their facilities for providing environmental education? (Survey question #11)
9. What in-service opportunities are provided to school personnel, in regard to environmental education and which in-service training methods do administrators perceive as being most desirable? (Survey questions #12, 14)
10. What are administrators' priorities regarding environmental education and its relationship to other "non-basic" parts of the curricula? (Survey question #13)
11. What supplementary services for implementing

environmental education do administrators perceive as being most desirable? (Survey question #15)

12. What do administrators perceive as the greatest block against the implementation of environmental education? (Survey question #16)

## CHAPTER TWO

### Relevant Research

#### A History of Environmental Education

More than two decades have passed since 1969 when widespread environmental concern began to materialize into action. During the Nixon era, the administration first had to confront environmental problems that could no longer be ignored. The same year he was inaugurated, 1969, President Nixon signed Executive Order No. 11472, setting up the President's Environmental Quality Council. Later in that year, however, Congress grabbed back the initiative from the president by knocking out funding for the Council and providing for the present Council on Environmental Quality (CEQ) in the National Environmental Policy Act, signed into law on January 1, 1970. (Cook, 1982)

The same year other events also occurred that helped shape the environmental movement such as Earth Day, when our own nation and many others paused to reflect upon the quality of our life and the prospects for improving that quality. For many, the question of our planet's future survival really came into focus at that point. In July, 1970, the president's executive reorganization plans No. 3 and 4 were implemented, bringing into existence the now familiar Environmental Protection Agency (EPA). (Cook, 1982) People were increasingly aware and concerned about protecting the environment.



The education community responded to the occasion, and "environmental education" soon became a familiar term. In December, 1970, the first National Conference on Environmental Education, focusing on elementary and secondary education was held at the University of Wisconsin - Green Bay. Thereafter, many other conferences followed, all trying to define environmental education, to develop strategies for implementation, trying to focus on interrelationships and ecological associations - all to help young people understand how they fit into the ecological equation. The University of Wisconsin at Green Bay became the first higher education institution to focus a total curriculum upon environmental themes.

In 1970, the Environmental Education Act was put into law. Environmental educators held high hopes for the bill since it was intended to incorporate learning about the environment into the country's educational system. The Act was controversial among educators from the beginning and was unwelcomed by the U.S. Office of Education. A token five million dollars was authorized and the appropriated amounts were much less. (Cook, 1982)

Environmental education was a new approach to learning. It was intended to bring students from the classroom into the real world, to learn how life and society really worked. It was oriented toward the holistic approach, was process oriented, and used problem solving extensively. It aimed to

pull together the basic disciplines and relate them in interdisciplinary ways rather than learning each discipline as an individual entity, as has often been custom in our schools. Educationally, the potentials were endless.

However, it was a long, hard push before the U.S. Office of Education even established an Office of Environmental Education (OEE) as called for in the law. Federal leadership in environmental education was mostly downhill and never did emerge as an effective national force. (Cook, 1982) It did, however, stimulate more activity and attention to environmental education than would have occurred without it. Many smaller projects and programs were funded by the OEE, but evaluation was a very low priority (partly due to a lack of funding). (Cook, 1982) In general, most authors agreed that the Environmental Education Act was weak. (Brennan 1979; Cook 1982; Disinger, 1986)

Cook suggested that, because of the lack of federal leadership, other organizations formed to improve leadership in the field: the Subcommittee on Environmental Education in the Federal Interagency Committee of Education (FICE), the National Environmental Education Development Project (NEED), the National Environmental Study Area Program (NESA), and the formation of several non-governmental organizations like the Conservation Education Association, the Environmental Task Force of the National Education Association, and the Alliance for Environmental Educators. (Cook, 1982)

The Education and Consolidation and Improvement Act of 1981 provided for environmental education to be a legitimate program for states to finance if they so desired, using their educational block grant funds. The listing of environmental education in the bill was due largely to the efforts of the National Wildlife Federation and the Alliance for Environmental Education. (Tuller, 1989)

In 1982, Disinger and Bousquet addressed the question of what the federal actions meant at the state level concerning environmental education. They assessed state education agencies nationwide. They found a large inconsistency in the levels of commitment to environmental education. In a few cases they found full time people directly assigned to be involved in environmental education. In most cases, the responsibility is spread among offices. Often environmental education is an extra duty for the science education staffs. Rarely are language arts or the humanities involved. According to Disinger and Bousquet, even though the federal system intended environmental education to be interdisciplinary, it is rarely handled as such at the state level. This issue emphasized one of the shortcomings with implementing environmental education, defining it. Definitions are usually vague and allow for a variety of interpretations. The authors believed that this causes many problems at every level of organization.

Many supporters of environmental education see the need

for more federal involvement, especially in terms of directions, programs, and resources. (Wilke, 1985) It has been argued that environmental education is a high-priority general welfare consideration and thus deserves federal attention and support. (Disinger and Bousquet, 1982)

However, as Disinger and Bousquet pointed out, the states are clearly identified as the key actors in the public educational system. The one thing all states have in common is that they all administer their educational activities through a state-level agency, but after that point it is hard to generalize further. The overall organization, level of control maintained, and services provided vary in every state depending upon state constitutions, laws, regulations, budgets, and politics. (Disinger and Bousquet, 1982)

With current federal cutbacks in support for both education and environment, environmental educators, according to Disinger and Bousquet, will probably take an increasing interest in state-level activity. This trend has in fact begun but probably not as intensively as the authors would have liked, evidenced by the handful of in-depth state and regional surveys and evaluations concerning environmental education that can be found.

There are many other researchers who have disappointing results to report from their research concerning environmental education in the United States. Brennan concluded that "it might be sufficient to say that we are just about where we

were ten years ago - or even twenty years ago - in the development of an environmental education program for the schools of America." (Brennan, 1979) In 1983, Trent performed an assessment of the state of environmental education in our nation for the entire decade following the Environmental Education Act. He found that certain areas of state activity had increased, such as appointing coordinators and offering teacher training. But, he found no significant change in states having a state plan for placing environmental education in the curricula, getting assistance from universities, providing adequate funding, or having certifiable majors or minors in environmental education. (Trent, 1983)

"Like most curricular reform movements initiated from outside the educational establishment, environmental education did not, and has not, established for itself a preeminent, even an accepted, position in schooling." (Disinger, 1986, pp. 1-3) Federal monies, Disinger pointed out, are becoming relatively more and more difficult to acquire, and following in line, support at the state level is also decreasing.

In 1982, Cook believed that due to the flurry of the environmental movement, environmental educators had made some progress. There are curriculum materials on the environment, conferences, workshops, teacher-in-service training, environmental education centers, journals, and associations. And, he said, they did not come about by chance. They are a

product of a true concern for the world in which we live and the abuse we are heaping upon it. However, we are now in a period of uncertainty and shrinking budgets.

"The luxury of easy money to fund new untested ideas has disappeared, and dollars spent must go for proven or high potential value activities. Good evaluation of programs and materials will be a must in keeping the ground gained through education during the past 14 years." (Cook, 1982, pg.6)

Four years later, Disinger wrote that he did not believe that environmental education was, in fact, becoming established in schools, and that "teachers have found it difficult to overcome the inertia of a system in which established priorities are perpetrated to the exclusion of more current concerns." (Disinger, 1986, pg. 2)

Brennan (Brennan, 1986), in a 1986 article wrote that back in 1957, at an Audubon Society meeting, he suggested that conservation was "a way of life, a philosophy of living based on the natural and physical laws of science and tempered by the moral, intellectual and social environment of the individual" (Brennan, 1986, pg. 1) "I called for," he stated, "a program of education which would involve all the disciplines and all levels of education, be interdisciplinary in its approach and conceptual in its structure." We seem, at this point, according to all research found, to be quite far from offering our children an educational program like the one Brennan suggested. Despite the recognition environmental education has received on a national level, it has suffered

from inconsistencies in definition and implementation.

On November 16, 1990, President Bush signed into law the National Environmental Education Act (NEEA). The Act is designed to increase public understanding of the natural environment and to advance and develop environmental education and training. This newly enacted law is Public Law 101-619.

In the law, Congress finds increasing threats to human health and environmental quality in both urban and rural areas and that there is a need for understanding these problems in order to solve them. The law, through the EPA, requires partnership among federal government agencies, local education institutions, and State agencies, not-for-profit educational and environmental organizations, and private sector interests. This partnership is to work "to increase understanding of the natural and built environment and to improve awareness of environmental problems." (National Environmental Education Act of 1990)

To carry out the law, EPA is directed to establish an Office of Environmental Education. This office will administer grants under the Act. Guidelines for the grants are expected in July, 1991 and funds won't be available until October, 1991. Generally, the grants will cover the development of Environmental Education curricula, assessment of environmental problems, projects to understand a specific environmental issue, teacher training, and international environmental projects. EPA was also directed to take charge

of an Environmental Education and Training Program to train education professionals in the "development and delivery of environmental education and training programs and studies." (National Environmental Education Act, 1990)

The law also makes provisions for internships and fellowships and an awards program for awarding elementary and secondary teachers from each state for their contributions to environmental education.

Says Jack De golia, interim president for the Montana Environmental Education Association (MEEA),

"The most far-reaching provision of this law, one that could offer long-term support for environmental education (EE), is toward the end of the act. Section 10 establishes the National Environmental Education and Training Foundation. The Foundation could help EE as the National Endowment for the Arts aids artists.

This law passed nearly unnoticed. Many of us in EE in Montana may not start seeing its effects until grant money begins arriving. But, it's certainly a bright ray of hope, as EE makes a comeback on the eve of the 21st century." (De golia, 1991, p. 2)



### Current Trends

The 1970s saw a considerable amount of activity in the public school curricula over environmental education. Almost two decades after the first Earth Day, however, the progress of environmental education seems to have slowed significantly (Pettus and Teates, 1983; Trent, 1983; Troy and Schwabb, 1982).

One of the trends seems to be that environmental education is difficult to incorporate due to its interdisciplinary nature. (Tuller, 1989; Disinger, 1986) Disinger stated that schools, especially high schools, have a difficult time teaching concepts across the curricula. McCaw, who did a study on "Teacher Attitudes Toward Environmental Education" found that elementary teachers took nearly 40 percent more study trips per teacher than did those in secondary schools. He attributed this to specialization of subject areas in junior and senior high schools. (McCaw, 1980)

A study done by Pettus and Schwabb, "A Survey of Public School Principals on the State of Environmental Education" found that environmental education is given very little time within the taught and tested curricula. They reported that of the schools in their survey (they chose the state of Virginia), 72 percent provided environmental education. Of those, 64 percent provided an average of an hour or less per week, and only 10 percent provided it more than two hours per

week. They also concluded that little of this time, mostly offered in the elementary schools, is being followed up or broadened in later schooling. (Pettus and Schwabb, 1979) Tewksbury and Harris (1981), and Tuller (1989) found nearly the same results in their studies of the status of environmental education in public schools by surveying school principals in rural New York.

Tuller found that 94 percent of surveyed principals stated that their school provided some sort of environmental education. (Tuller, 1989) Tewksbury and Harris reported that 73 percent provided environmental education (Tewksbury and Harris, 1982) and Pettus and Schwabb in their Virginia study found that 72 percent reported providing environmental education. (Pettus and Schwabb, 1979)

Tuller and Tewksbury both found an identical 76 percent of schools surveyed reported that less than one hour per week of a pupils' class time was spent on environmental education. (Tuller, 1989; Tewksbury and Harris, 1982) The Virginia study reported that 64 percent of surveyed schools said that their students spent less than one hour of class time per week on environmental education. (Pettus and Schwabb, 1979) All three (Pettus and Schwabb, Tewksbury and Harris, and Tuller) found that environmental education is offered at a greater frequency as a multi-disciplinary approach rather than an interdisciplinary approach (which environmental education is designed to be). (Tuller, 1989). All three studies suggested

that a greater percentage of schools only reach the awareness-oriented stage of understanding environmental purposes rather than the action-oriented stage for problem solving and application. (Tuller, 1989; Tewksbury and Harris, 1982)

In their study on environmental education and state agencies, Disinger and Bousquet drew several conclusions concerning current trends, especially in relation to state education agencies. Their data revealed unevenness in levels of commitment to environmental education by state agencies across the nation. All state agencies paid some attention to it, as some professional staff was at least assigned to some aspect of environmental education. Commitment ranged from having several staff assigned specifically to environmental education to staff having environmental education tacked on to their "real" responsibilities, and spending as little as two hours a week on it. Disinger believed "this may be reflective of a continuing lack of priority for environmental education within the federal establishment, compounded by a proclivity for state education agencies to follow federal funding priorities." (Disinger, 1982, p. 21)

Disinger stated that immediate public concerns about environmental issues will keep supporting the efforts of environmental educators. Many schools incorporate environmental education into their science and social studies curricula. This is the area in which environmental education has gained the most. Also, many environmental teaching

materials, lesson plans, and curriculum efforts have sprung from the long, slow push by environmental educators. Some examples include Project Learning Tree and Project Wild, neither of which are supported by federal funds but rather from a cooperative effort by representatives from state education agencies and state resource management agencies.

Curriculum design surfaced as one of the areas that needed to be strengthened but has been forced to progress slowly during the formative years of environmental education. Early planning resources tended to be of the small activity type or sketchy lesson plan type when teachers also needed a concrete focus as to where and when to implement these concepts. Many of the current instructional plans don't include a clear scope or sequence. Disinger's research suggested that more formal environmental education curricula be developed in order for it to make a more orderly entrance into the public school.

Another current trend in research indicates a lack of in-service teacher training. (McCaw, 1980; Pettus and Schwabb, 1979) Both authors concluded that teacher training has been inadequate. McCaw surveyed teachers in Columbus, Ohio, as part of a study of the feasibility of establishing an environmental education program in the public schools. Three of the study's goals were to determine teacher's priorities regarding environmental education and other "non-basic" parts of the curriculum, to find out what factors

inhibit them from conducting environmental education activities and to determine the willingness of teachers to obtain in-service training in the use of the environment to teach.

In McCaw's study, environmental education placed highly when ranked for teacher priorities against other "non-basic" school activities, but declined progressively from elementary to junior high to senior high. Money, transportation, and time were ranked as the highest obstructions to environmental education field trips. Most interesting, however, were his conclusions concerning in-service training. McCaw saw in-service training as the basis of an effective environmental education program. Though demands are great on teacher's in-service time, he found that teachers were generally interested in training in environmental education techniques. Elementary teachers were more interested than were secondary teachers.

Wilke wrote a report on the establishment of a pre-service environmental education training program in the state of Wisconsin. (Wilke, 1985) He noted "unfortunately, pre-service teacher preparation programs in environmental education remain relatively scarce and poorly developed." (Wilke, 1985, p. 1) Under a recent program, every K-12 teacher in training in Wisconsin is required to be instructed in, and pass a minimum competency test on the instruction of environmental education. The plan is linked to their teacher certification requirements and also establishes that this type

of program exists and can exist elsewhere for a relatively small amount of money. (Wilke, 1985) This is a positive trend that hopefully other states will follow.

In viewing the current trends of our nation's environmental education, one is most inclined to ask, "why hasn't environmental education been more accepted by and incorporated into our public schools?" Ham and Sewing did a recent study, "Barriers to Environmental Education" in which they listed four barriers to environmental education: conceptual (a lack of consensus about the scope and content of environmental education), logistical (time, funding, resources, classroom size, etc.), educational (teachers' misgivings about their own competence to teach environmental education), and attitudinal. Logistical ranked first, school and preparation time second, then educational, then conceptual, and finally attitudinal.

This has been a brief summary of research done indicating the nationwide trends of environmental education. As all research pointed out, each state varies from the next in its commitment and approach. In order for a state to approach the matter of increasing the amount and quality of environmental education taught within its schools, it must assess its present status.

Three studies are particularly relevant to this project, "Teacher Attitudes Toward Environmental Education" (McCaw 1980), "The Status of Environmental Education in Northern New

York." (Tewksbury and Harris, 1982) and "The Status of Environmental Education in Public Schools in Northeastern New York." (Tuller, 1989) These authors' findings as well as their research methods were used in forming the basis of this study.

### **Environmental Education in Montana**

In 1974, John Jackson, an EdD student at the University of Montana, developed an environmental education master plan for implementing environmental education programs into the schools of Montana. The plan contained seven goals for environmental education in Montana: establishment of an advisory council; restructuring the curriculum to ensure the inclusion of environmental awareness and understanding; developing environmental education training programs for teachers; establishment of a minor in environmental education at state universities; employment by the Department of Public Instruction of a person primarily assigned to environmental education; requiring all schools to have outdoor laboratories; and fostering in the citizens of Montana an appreciation of and commitment to the environment. (Jackson, 1974)

Few of Jackson's goals have been achieved. (Gundersun, 1989; Light, 1984) There are numerous environmental education pre-and-in-service teacher training programs but teachers must often travel great distances for these on their own time and money. Environmental education workshops are not offered directly through the Office of Public Instruction (OPI). OPI does not employ someone whose full time responsibility is environmental education. The current science specialist has taken it on in addition to his regular work load. There is no requirement in Montana that new schools set land aside for an outdoor lab, though several



schools have done so. It is difficult to determine if Montanans have developed a set of values that reflect a desire to maintain or improve the environment. At the time of Jackson's study, in 1974, an advisory council, the Montana Environmental Education Committee was formed but soon dissolved. Just recently, in January of 1991, the Montana Environmental Education Association (MEEA) was formed. They are presently establishing goals similar to those of Jackson (1974), but with widespread support of the educational community as well as the increasing number of "environmental educators" in the state.

Presently only three public schools (Billings, Great Falls, and Lolo) have formal environmental education programs but several others do have fairly extensive (but varied) environmental education and/or outdoor education programs that incorporate environmental issues. Great Falls employs the state's only full-time environmental education teachers; they have two full time environmental educators and at least one aide in their public school system. This program, led by Janet Thomson has received awards and been recognized by the National Science Foundation as an exemplary model. (Thomson, 1986)

Several schools (such as Hamilton) have developed their own resource materials and teaching guides in environmental education for their teachers. Others use the fairly extensive materials available through agencies such as the United States

National Park Service, the U.S. Forest Service, the State Department of Fish, Wildlife and Parks, National Audubon Society, and the National Wildlife Federation. All of these agencies have, at one time (and most still do) published teaching materials available to educators, often at no cost. Some of these agencies, along with other organizations, offer teacher workshops or their professional area of expertise to assist teachers in the classroom. The National Environmental Education Development program, through the U.S. National Park Service, has written programs and teaching materials for elementary education. Project Wild and Project Learning Tree are also popular workshops, and greatly due to the efforts of the OPI, these workshops are made easily available to nearly every teacher in the state. (See Appendix E for a listing of resources and workshops available in Montana)

Even with the many resources, teaching materials and teacher training available, environmental education efforts in Montana public schools have been sporadic. (Gundersun, 1989) In 1984, Kenneth Light cited part of the problem was that though there are many materials and teaching guides made available to teachers, most teachers are not aware they exist or know where they can get them. Joan Schumaker, Conservation Education Coordinator of the Montana Department of Natural Resources, saw the same problem and has recently helped publish a conservation education resource directory, where teachers can find the materials they need and learn about what

is available as well as who else in the state is teaching environmental education and how.

The MEEA hopes to pull the loose ends of environmental education in Montana together. With the momentum they believe they have now, combined with the hope of new monetary support from the federal government, MEEA may serve as the catalyst for all the different factions involved in environmental education to join and implement programs statewide.

In January, 1991, Jack De golia, interim president of MEEA said,

"We all live under the Big Sky, and it's vital that our kids base their future decisions about our natural resources on good information. We want to encourage more instruction about Montana's natural resources and environment."

## **CHAPTER THREE**

### **Research Design**

#### **Restatement of the Problem**

There is a lack of documented data concerning the status and existence of environmental education in grades seven through twelve in Montana.

The purpose of this study was to assess the status of and attitudes towards environmental education according to secondary public school principals in Montana. This study also investigated possible recommendations for effective implementation of environmental education in Montana in the future.

The responses to the 16 question mail survey were analyzed question by question. A comparison was done by calculating what percentage of the survey population chose each answer. The researcher described the responses by discussing similarities and differences of responses within the surveyed group.

#### **Goals**

The intent of this study was to have the survey group answer the following questions.

1. What percent of the surveyed schools have environmental education in their curricula?
2. Where environmental education is provided, what is taught and how is it presented?
3. Who is involved in the planning of environmental

education?

4. Where environmental education is provided, how much classtime per week is spent on it?
5. Where environmental education is provided, who teaches it?
6. Do administrators perceive a need for teachers to receive special training in environmental education?
7. What are the sources of instructional materials for environmental education for public schools?
8. How do administrators perceive the adequacy of their facilities for providing environmental education?
9. What in-service opportunities are provided to school personnel, in regard to environmental education and which in-service training methods do administrators perceive as being most desirable?
10. What are administrator's priorities regarding environmental education and its relationship to other "non-basic" parts of the curricula?
11. What supplementary services for implementing environmental education do administrators perceive as being most desirable?
12. What do administrators perceive as the greatest block against the implementation of environmental education?

### **Research Population**

This study sought responses from all available public high schools in the state of Montana. The questionnaire was administered to the 170 principals and superintendents in Montana. Respondents received a letter of introduction that included a definition of environmental education, the survey questionnaire, a requested return date, and a stamped, self-addressed envelope to the surveyor. A follow-up postcard was sent 14 days later, as a reminder. A minimum survey response of 60 percent was to be considered valid.

The responses to the 16 question survey were analyzed question by question. A comparison was done by calculating what percentage of the survey population chose each answer. Responses were described by discussing similarities and differences of responses within the surveyed group.

### The Survey Instrument

The study created its own instrument based on the tested devices (Tewksbury and Harris, 1982; McCaw, 1980; Tuller, 1989) and some questions unique to this project, designed by this researcher.

Questions 1, 4, 5, 6, 7, 8, 9, 9a, 9b, 9c, and 11 were replicated from the Tewksbury and Harris survey of 1982 with permission from the authors. Questions 2, 3, 9d, 10, and 12 were based on the Tewksbury and Harris survey, but changes were made by this researcher to improve readability and/or to adapt the questions to this particular project. Questions 14 and 15 were replicated from the Tuller survey (Tuller, 1989) with permission from the author. Question 13 was based on a question from the McCaw 1980 study. Questions 7a and 16 were designed by this researcher.

The question styles took three general forms: questions in which one or more answers to the same question are requested and questions that ask the respondent to rank order responses or choose among them. Remaining questions involved filling in blanks. The survey instrument was tested by a committee of eight people including principals, superintendents, teachers, and professionals in the environmental education field.

Ann Swisher Palen  
 C/O Environmental Studies Program  
 University of Montana  
 Missoula, Montana 59812  
 February 18, 1991

Code # \_\_\_\_\_

This is a busy time for public schools, but I would like to ask for your assistance. My name is Ann Swisher Palen. I am a graduate student in Environmental Studies at the University of Montana. For completion of my masters degree, I am conducting a survey on the status of environmental education in the public schools of Montana.

Environmental education is of growing concern to many educators. It is also a relatively new field and nationwide, its implementation and incorporation into the curriculum varies widely from state to state and school to school. Extensive surveys have been done in many states to answer such questions as: Are schools able to offer environmental education? To what extent? Have more current environmental concerns increased the offering of environmental education? Are public schools willing and what are the most appropriate methods for implementing environmental education and teacher training for the same? With your help, this survey intends to investigate these questions for the state of Montana.

Please find enclosed: a sixteen item survey. This survey was designed for principals to complete and is being sent to the principals of all public high schools in the state of Montana. The results of this survey may give you a chance to look at how your colleagues and other schools implement environmental education.

The questionnaire is brief and I hope you find it of interest. Please read carefully the introductory definition of environmental education. It will clarify the content of the questions.

I would sincerely appreciate receiving your survey as soon as possible so I may analyze the data by the end of March.

Thank you very much for the time that it takes you to complete the questionnaire. If you like, you may receive a summary of the responses at this project's completion.

Sincerely,

Ann Swisher Palen

=====

Survey on the Status of Environmental Education in Public Schools in Montana.

Code # \_\_\_\_\_ (Please place the code number from your cover letter in this space. This is expressly for the purpose of monitoring response).

Before responding to the survey questions, please read the following definition of Environmental Education:

Environmental Education is the process of recognizing values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the inter-relatedness among man, his culture and his biophysical surroundings. It entails practice in decision-making and self-information of a code of behavior about issues concerning environmental quality. (Horn 1970)

#### DIRECTIONS

PLEASE CIRCLE THE APPROPRIATE ANSWER OR ANSWERS TO EACH QUESTION UNLESS INSTRUCTED OTHERWISE.



A survey on the status of environmental education in public schools in Montana.

Code # \_\_\_\_\_

Grade levels in school: (circle one)

K-12	8-12
6-12	9-12
7-12	10-12

Enrollment: 1-200      201-400      401-800      801-1200      1200 up

1. Does your school provide environmental education? Yes No  
If yes, please continue  
If no, please comment on whether or not you believe your school  
should provide environmental education and why you think it does  
not

Do not continue this survey. Thank you for sending your comments

2. At what grade levels in your school is environmental education taught? \_\_\_\_\_
3. How is your environmental education curriculum organized?
  - a. disciplinary orientation
  - b. multi-disciplinary and/or interdisciplinary
4. Who is involved in planning environmental education in your school? (circle one or more)
  - a. a consulting team
  - b. administrators
  - c. all teachers
  - d. some teachers
  - e. students
  - f. parents
  - g. other (please specify) \_\_\_\_\_
- 4a. If teachers are involved in the planning, please specify their fields: (circle all that apply)

a. science	d. english
b. social studies	e. physical education
c. all teachers	f. music or art
g. other (please specify) _____	
5. Approximately how much time does the average student spend per week on environmental education? (including field trips)
  - a. less than an hour
  - b. 1-2 hours
  - c. 3-5 hours
  - d. more than 5 hours a week
6. Which of the following characteristics of environmental education is your environmental education program promoting? (circle all that apply)
  - a. an attitude of concern for our place in the environment
  - b. awareness of environmental problems
  - c. knowledge of history and current action concerning these problems
  - d. ability to plan solutions to environmental problems
  - e. ability to act in carrying out projects to alleviate problems
7. What concerns are emphasized in environmental education at your school? (circle all that apply)
  - a. interrelationships of all ecosystem components
  - b. other concepts of ecology
  - c. population education
  - d. energy problems
  - e. pollution and its relation to life style
  - f. economics of environmental practices
  - g. man's stewardship of the earth
  - h. other (please specify) \_\_\_\_\_

- 7a. What local and statewide environmental concerns are emphasized in environmental education at your school? (circle all that apply)
- |                       |                    |
|-----------------------|--------------------|
| 1. watershed issues   | 6. air pollution   |
| 2. land use (general) | 7. water pollution |
| 3. wildlife           | 8. landfills       |
| 4. wilderness         | 9. toxic wastes    |
| 5. industry           | 10. litter         |
8. Who teaches environmental education in your school? (circle all that apply)
- a. specially hired environmental specialists
  - b. regular teachers
  - c. community citizens (please specify) \_\_\_\_\_
  - d. other (please specify) \_\_\_\_\_
9. If it is teachers who teach environmental education in your school, what is their primary professional preparation? (circle all that apply)
- |                   |                           |
|-------------------|---------------------------|
| a. science        | e. physical education     |
| b. social studies | f. music or art           |
| c. math           | g. other (please specify) |
| d. english        | _____                     |
- 9a. Teachers of environmental education have: (circle all that apply)
- a. been pretrained in environmental education
  - b. in-service training in environmental education
  - c. not been formally trained in environmental education
- 9b. Pre-service training in the teaching of environmental education is:
- a. required of all teachers
  - b. not required of any teachers
  - c. required of some teachers
- 9c. In-service training in the teaching of environmental education is:
- a. required of all teachers
  - b. not required of any teachers
  - c. required of some teachers
- 9d. Do you believe it is important to offer workshops to teachers in environmental concepts and principles?
- Yes                      No
10. What is your source of instructional materials for environmental education? (circle all that apply)
- a. textbooks of one discipline
  - b. textbooks representing two or more disciplines
  - c. materials provided by the state education agency
  - d. materials developed by the school committee
  - e. a published outdoor education curricular program
  - f. materials developed by the teaching staff
  - g. a combination of commercial and teacher prepared materials
  - h. materials from various resource agencies (i.e. Department of Fish, Wildlife and Parks)
  - i. other \_\_\_\_\_
11. In your opinion, does your school have adequate facilities to provide environmental education?
- Yes                      No

12. In-service opportunities are provided to school personnel, in regard to environmental education, in the following form: (circle all that apply)
- a. no opportunities are provided
  - b. by staff exchange
  - c. in staff meetings
  - d. by conferences
  - e. by workshops
  - f. by continuing education courses
  - g. by correspondence courses
  - h. by institutes
  - i. other (please specify) \_\_\_\_\_
- 
13. Rank the following according to how important you believe each is in a child's education. While all may be important, assume that there is not enough time or money to do all of them. What priority would you give each in relation to the other? (use a scale of 1-7 with 1=very important and 7=unimportant)
- |                               |  |
|-------------------------------|--|
| _____ Music Education         | _____ Extracurricular Clubs                  |
| _____ Art Education           | _____ Consumer Education                     |
| _____ Sports                  | _____ Vocational Education                   |
| _____ Environmental Education | _____ Other (please describe and rank) _____ |
14. Please indicate which of the following in-service methods for training teachers in environmental education you would consider to be most desirable with consideration to perceived cost and time constraints. (circle all that apply)
- a. an in-school workshop or conference
  - b. an on-school grounds workshop conducted outdoors
  - c. a series of workshops held within the school
  - d. a series of workshops held on school property but conducted outdoors
  - e. a workshop held at another facility
  - f. a series of workshops held at another facility
  - g. other (please specify) \_\_\_\_\_
15. Please indicate which of the following supplementary services for implementing environmental education in your school you would consider to be desirable with consideration to perceived cost and time constraints? (circle all that apply)
- a. additional lesson designs, teaching materials, and literature
  - b. trained environmental education professionals contracted from outside the school faculty who would provide classes and workshops for students in your school
  - c. trained environmental education professionals and a facility contracted for an intensive study away from school property
  - d. trained environmental education professionals and a facility contracted for a series of classes away from school property
  - e. other (please specify) \_\_\_\_\_
- 
16. What do you see as the greatest weaknesses in implementing environmental education in your school? Rank the top 3, 1 being the greatest weakness.
- a \_\_\_\_\_ funding
  - b \_\_\_\_\_ lack of teacher interest
  - c \_\_\_\_\_ a general lack of awareness by teachers
  - d \_\_\_\_\_ lack of specialized training
  - e \_\_\_\_\_ no room for it in curriculum
  - f \_\_\_\_\_ not a high priority
- (please check which applies if this item is ranked)
- \_\_\_\_\_ a. for teachers
  - \_\_\_\_\_ b. for administration
  - g \_\_\_\_\_ other (please specify) \_\_\_\_\_

THANK YOU FOR YOUR TIME AND EFFORT IN RESPONDING TO THIS QUESTIONNAIRE.  
DO YOU DESIRE A COPY OF THE RESULTS OF THIS STUDY? YES NO

### CONCLUSION

It was the hope of this study that a clear assessment of the status of environmental education in Montana would be provided. It may lead to a greater understanding of what public school principals believe to be the most appropriate ways of insuring the survival of environmental education in the public schools of this area in the future.

## CHAPTER FOUR

### Results

One hundred sixteen principals returned completed questionnaires. The response rate of the survey was approximately 68 percent of the 170 school principals and superintendents (administrators) in the survey area. Answer results for each item were totaled and were presented in percentages of the total response. Questions 1 and 2 were presented in percentages of all administrators who responded to the survey. Questions 3 through 16 were presented in percentages of all administrators who responded "yes" to having environmental education in their school program. Those who responded "no" were asked to comment but not to complete the rest of the survey. Most of the data cited are summarized in tables 1-8.

Of the 116 respondents, 71 percent stated that their school provided some sort of environmental education. This was very similar to both the Tewksbury and Harris study of 1982 in New York (73%) and the McCaw study of 1978 in Virginia (72%).

Twenty nine percent of the respondents reported that they did not have environmental education. Respondents were asked to comment on whether they believe their school should provide environmental education and why they think it does not. Thirty of the 34 "no environmental education" administrators did make comments. Two stated that they did

not believe their school should provide environmental education because there are too many courses competing for time and money already. Both stated they knew it was informally incorporated by science teachers into their classes. At least nine commented that since there was no "written curriculum," it was up to individual teachers to include some environmental education in their program. One administrator stated that with the new college entrance requirements, environmental education would be put on the back burner. Six respondents cited they could not include environmental education in their school programs because they do not get funding for it. Thirteen of the 34 "no" responses said that they had no trained staff to teach (or organize) an environmental education program. Six schools reported that they were working on developing an environmental education program or at least formally incorporating it into science 7-10. One administrator stated there wasn't any need to provide environmental education because there wasn't any environmental impact in his area. Time and funding were reported most often by administrators as the reasons their schools do not provide environmental education.

Table 1 indicates the proportion of those administrators surveyed who returned surveys and reported either providing environmental education in their schools or not providing environmental education. Though this survey was intended for Montana Public High Schools, most principals responding to

TABLE 1. PROPORTION OF THOSE SURVEYED  
PROVIDING ENVIRONMENTAL EDUCATION (EE)

A. Total Grade Levels of Schools Surveyed					
	<u>K-12</u>	<u>6-12</u>	<u>9-12</u>	<u>10-12</u>	<u>Total</u>
No EE	14%	15%	---	---	29%
Have EE	38%	10%	21%	2%	71%
Total responses	56	27	23	2	108

B. Enrollments						
	<u>1-200</u>	<u>201-400</u>	<u>401-800</u>	<u>801-1200</u>	<u>1200-up</u>	<u>Total</u>
No EE	40	24	----	----	----	28%
Have EE	60	71	100%	100%	100%	72%
Total responses	50	28	14	4	6	102**

C. Totals Including Those Who Did Not State Grades or Enrollments		
	<u>Number of responses</u>	<u>Total</u>
No EE	34	29%
Have EE	82	71%
Total responses	116 out of 170	68%

\* 8 principals did not state grade levels

\*\* 14 principals did not state enrollments

TABLE 2. THE EXTENT OF ENVIRONMENTAL EDUCATION  
IN SPECIFIC GRADES AND ENROLLMENT SIZES

---

A. Grade Levels			
Grade level	No. of schools surveyed w/ grade level	Have EE in curriculum in grade level	% of schools surveyed who include corresponding grade and do provide environmental education at that grade level
K	55	16	29%
1	55	18	33%
2	55	18	33%
3	55	17	31%
4	55	21	38%
5	55	21	38%
6	56	23	41%
7	69	37	54%
8	70	34	49%
9	106	64	60%
10	108	66	61%
11	108	62	57%
12	108	59	55%

---

B. Enrollments			
Enrollments	No. of schools surveyed at enrollment level	Have EE in curriculum	% of schools surveyed at enrollment level who have EE
1-200	50	30	60%
201-400	28	20	71%
401-800	14	14	100%
801-1200	4	4	100%
1200-up	6	6	100%
Total	102	74	100%

---



the survey were administrating schools with grades K-12 and a student population of fewer than 200. Several comments and question results were inclusive of the elementary grades.

Table 2 shows what percentage of all schools surveyed include environmental education at each grade level. The results indicate that grades 7 through 12 are more likely to receive environmental education than grades K-6 in Montana public schools. Table 2 also shows that of the larger schools surveyed (student enrollments of greater than 400) 100 percent reported including environmental education in their schools. The numbers of larger schools are comparatively small (24%) so this data may not be indicative of any significant trend. In both the Tewksbury and Harris study (Tewksbury and Harris, 1982) and the Tuller study (Tuller, 1989) there appears to be little difference in the existence of environmental education with regard to grade level or school size.

Tables 3 to 8 show percentages of responses from those administrators who report providing environmental education in their schools. Data concerning curriculum orientation are presented in table 3. Thirty two percent of schools provide environmental education that is organized as a discipline. The highest percentage (68%) of organization was either multi-disciplinary or interdisciplinary in nature. Table 3 also indicates the approximate amount of classtime per week students spend on environmental education. Four

percent of schools provide more than five hours a week of classtime for students to spend on environmental education. Seventy four percent of the administrators stated that their students average less than one hour per week on environmental education.

Fifty three percent of the principals indicated that their environmental education emphasized an awareness of environmental problems and 30 percent indicated that an attitude of concern for the environment was emphasized. In comparison, 13 percent reported emphasizing the ability to plan solutions and eight percent emphasized "the ability to act in carrying out problem-solving" as being promoted in their environmental education.

Table 3 also includes the concerns emphasized in environmental education. Eighty three percent of the administrators indicated that "interrelationships of all ecosystem components" was an emphasized concern in their school. The second highest concern was "pollution and its relation to life style (81%) and third highest concern was energy problems (80%). Less than half the respondents included the following as a concern indicated in their program: pollution education (49%), other concepts of ecology (48%), man's stewardship of the earth (39%) and economics of environmental practices (32%). Of local and statewide environmental concerns, water pollution was the concern most often emphasized in environmental education

TABLE 3. THE ORIENTATION AND EXTENT OF  
ENVIRONMENTAL EDUCATION IN SCHOOLS  
THAT PROVIDE ENVIRONMENTAL EDUCATION\*

---

A. Organization of Environmental Education Curricula:

Multi-disciplinary and/or interdisciplinary	68%
Disciplinary	32%

---

B. Approximate Amount of Classtime Per Week the  
Average Student Spends on  
Environmental Education:

Less than 1 hour	74%
1-2 hours	15%
3-5 hours	2%
More than 5 hours a week	4%
Not sure	5%

---

C. Characteristics of Environmental Education  
That are Promoted:

An awareness of environmental problems	53%
An attitude of concern for our place in the environment	30%
Knowledge of history and current action concerning these problems	15%
Ability to plan solutions to environmental problems	13%
Ability to act in carrying out projects to alleviate problems	8%

---

\* Totals from some items exceed 100% due to multiple responses

TABLE 3 Cont.


---

D. Concerns Emphasized in Environmental Education:

Interrelationships of all ecosystem components	83%
Pollution and its relations to life style	81%
Energy problems	80%
Population education	49%
Other concepts of ecology	48%
Man's stewardship of the earth	39%
Economics of environmental practices	32%

---

E. Local and Statewide Environmental Concerns  
Emphasized in Environmental Education:

Water pollution	94%
Air pollution	80%
Land use	78%
Wild life	68%
Litter	68%
Watershed issues	51%
Land fills	43%
Toxic wastes	43%
Wilderness	40%
Industry	35%

---

programs (94%). Air pollution (80%), land use (78%), wildlife (68%), litter (68%), and watershed issues (51%) were also highly emphasized. Forty three percent emphasized land fills and also toxic wastes, 40 percent emphasize wilderness and the least emphasized concern was industry (35%).

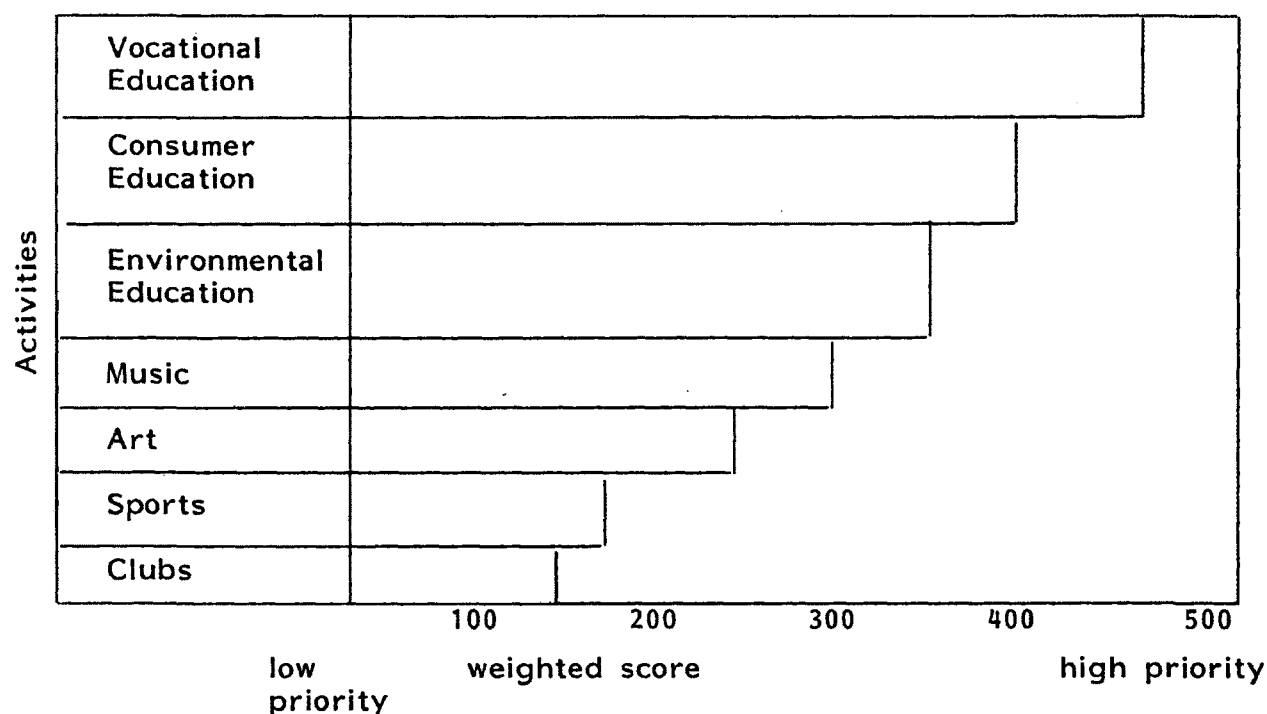
In prioritizing "non-basic" activities within their schools, eight percent chose environmental education as their number one priority (see Table 4). Vocational education was chosen number one by 49 percent, consumer education was chosen number one by 19 percent and 12 percent chose music as the number one priority.

When ranked on a weighted score scale, environmental education ranked as the number three priority of administrators who were asked to rank seven "non-basic" activities from one to seven in terms of priorities. Vocational education ranked the highest score again, and consumer education the second highest. At least 14 administrators made additional comments on the survey that the "basics" (English, Math, Science, etc.) were much more important than any of the "non-basic" activities. Two respondents commented that there shouldn't be any "non-basic" activities during school time.

Data on the preparation and instruction of environmental education are presented in Table 5. Of the 82 principals and superintendents responding that their school provided environmental education, 83 percent stated that environmental

TABLE 4. ADMINISTRATOR'S PRIORITIES REGARDING  
"NON-BASIC" SCHOOL ACTIVITIES

A. Total Ranking Scores of Activity Priorities



Score = Frequency x weight, administrators were asked to rank all 7 activities, 1 being the first choice. The highest weight (7) was given to the first choice, proportionately down to the lowest weight (1) for the 7th choice..

B. Proportion of Responses for Each Activity  
as Perceived Most Important

Vocational education	49%
Consumer education	19%
Music	12%
Environmental education	8%
Art	8%
Sports	4%
Clubs	---

education was planned by only some of the teachers. This was similar to the Tewksbury and Harris New York study, the McCaw Virginia study and the Tuller New York study (Tewksbury and Harris, 1982; McCaw, 1978; Tuller, 1989). Thirty five percent of the study's schools reported that administrators were involved with the planning. A relatively low percentage of schools employed all teachers (14%), students (9%), a consulting team (6%) or parents (6%). One school involved the U.S. Forest Service in planning environmental education. Eighty nine percent of surveyed schools used science teachers and 38 percent involved social studies teachers in the planning of environmental education. All teachers were involved by 11 percent of schools and 14 percent checked "other" and then specified elementary education. Four percent of surveyed schools involved English teachers and three percent each involved physical education, music or art and home economics. Several administrators (4) wrote comments that there was no formal planning of environmental education and that motivated teachers just plan their own. Results of this study may support the conclusion reached by Tewksbury and Harris on their study and also by the McCaw Virginia study as well as the Tuller study that "environmental education is emphasized in the science and social studies fields and is not integrated into subjects such as math, English, art and music" (Tuller, 1989, p. 41; Tewksbury and Harris, 1982; McCaw, 1978).

TABLE 5.      PREPARATION AND INSTRUCTION OF  
ENVIRONMENTAL EDUCATION\*

---

A.                      Persons Involved in the Planning of Environmental Education	
Some teachers	83%
Administrators	35%
All teachers	14%
Students	9%
Consulting team	6%
Parents	6%
Other (U.S. Forest Service)	1%

---

B.                      Primary Fields of Teachers Involved in the Planning of Environmental Education	
Science	89%
Social studies	38%
All teachers	11%
English	4%
Physical education	3%
Music or art	3%
Other - Home Economics	3%
Elementary Education	14%

---

\* Totals for some items exceed 100% due to multiple responses





Teaching of environmental education involves nearly the same personnel as planning. Ninety eight percent of schools surveyed cited science as the primary field of those teaching environmental education. Thirty seven percent indicated social studies and twenty three percent selected "other" and wrote in elementary education teachers as teaching environmental education. English was indicated by six percent, math by four percent, physical education by four percent and one school uses music or art teachers. One hundred percent of the responding administrators stated that it was their regular classroom teachers who teach environmental education. Six percent use specially hired environmental specialists and six percent indicated "other," all of whom wrote in "Forest Service" and "Department of Fish, Wildlife and Parks."

As shown in Table 6, only 20 percent of the administrators reported that they had teachers who had been pretrained in environmental education. Twenty six percent said that the teachers who teach environmental education in their schools have had in-service training in environmental education. Eighty five percent said their teachers had no formal training in environmental education. Ninety three percent of responding schools do not require pre-service training in environmental education, six percent require it of some teachers and one school stated that pre-service environmental education was required of all new teachers.

Eighty nine percent of surveyed administrators indicated that their schools do not require in-service training in environmental education of any teachers, while seven percent require it of some teachers and four percent require it of all teachers. (Table 6)

Sixty percent of the administrators responded that they believe it is important to offer workshops in environmental concepts and principles to teachers and 40 percent believe it is not important. This was slightly lower than the Tewksbury and Harris study (80 percent believed it was important to offer environmental workshops) and the Tuller study where 81 percent of the principals believed that such training was indeed important (Tuller, 1989).

The in-service opportunities provided to school personnel were mainly workshops (54%) and conferences (38%). Thirty one percent of the responding schools stated that no opportunities were provided. Twenty one percent used staff exchange to provide information on teaching environmental education, as well as using other institutes for resources. Sixteen percent provided continuing education courses and nine percent said staff meetings were used for environmental education training (see Table 6).

An in-school workshop or conference was perceived by the administrators (51%) as the most desirable method to teachers for providing in-service training. The second most popular (36%), they believe, would be an on-school grounds workshop

TABLE 6. TEACHER TRAINING AND SUPPLEMENTARY  
SERVICES FOR PROVIDING ENVIRONMENTAL EDUCATION\*

---

A. Proportion of Teachers Trained in Environmental Education:	
No formal training in environmental education	85%
Have had in-service training in environmental education	26%
Have been pretrained in environmental education	20%

---

B. Proportion of Public High Schools Requiring Preservice Training in the Teaching of Environmental Education:	
Not required of any teachers	93%
Required of some teachers	6%
Required of all teachers	1%

---

C. Proportion of Public High Schools Requiring In-Service Training in the Teaching of Environmental Education:	
Not required of any teachers	89%
Required of some teachers	7%
Required of all teachers	4%

---

D. Proportion of Principals Who Believe it is Important to Offer Workshops in Environmental Concepts and Principles to Teachers	
Yes, it is important	60%
No, it is not important	40%

---

\* Totals for some items exceed 100% due to multiple responses

TABLE 6 Cont.

---

E. In-Service Opportunities in Environmental Education Provided to School Personnel:	
Workshops	54%
Conferences	38%
No opportunities provided	31%
Staff exchange	21%
Other institutes	21%
Continuing education courses	16%
Provided at staff meetings	9%

---

F. In-Service Teacher Training Methods for Environmental Education that Teachers Consider to be Most Desirable:	
An in-school workshop or conference	51%
An on-school grounds workshop conducted outdoors	36%
A series of workshops held within the school	33%
A series of workshops held on school property, but outdoors	20%
A workshop held at another facility	18%
A series of workshops held at another facility	16%

---

G. Supplementary Services for Implementing Environmental Education that Principals Consider Most Desirable:	
Additional lesson designs, teaching materials and literature	80%
Trained environmental education professionals contracted from outside the school faculty who would provide classes and workshops for students on school property	48%
Trained environmental education professionals and a facility contracted for a series of classes away from school property	15%
Trained environmental education professionals and a facility contracted for an intensive study away from school property	9%

---

conducted outdoors, and third would be a series of workshops held within the school (33%). The least popular choices were workshops or a series of workshops held at another facility.

Also in Table 6, administrators (80%) chose additional lesson designs, teaching materials, and literature as the most desirable supplementary service for implementing environmental education. Having trained environmental education professionals come into their schools and do workshops for students was also popular (48%). Least popular were a series of classes conducted by trained professionals at another facility (15%) and an intensive study done by trained professionals at another facility (9%).

Most administrators (84%) reported using materials from various resource agencies as the largest proportion of sources for instructional materials used for environmental education (see Table 7). A combination of commercial and teacher made materials was the second highest percentage (62%) and third most popular was materials developed by the teaching staff (49%). Least used were a published outdoor or environmental education curricular program (16%) and materials developed by a school committee (4%).

Sixty percent of responding administrators believed their school has adequate facilities to provide environmental education and 40 percent believe they do not (Table 7).

Table 8 illustrates what administrators selected as the most common constraint to the development and implementation

TABLE 7. MATERIALS AND FACILITIES USED BY  
PUBLIC HIGH SCHOOLS IN TEACHING  
ENVIRONMENTAL EDUCATION\*

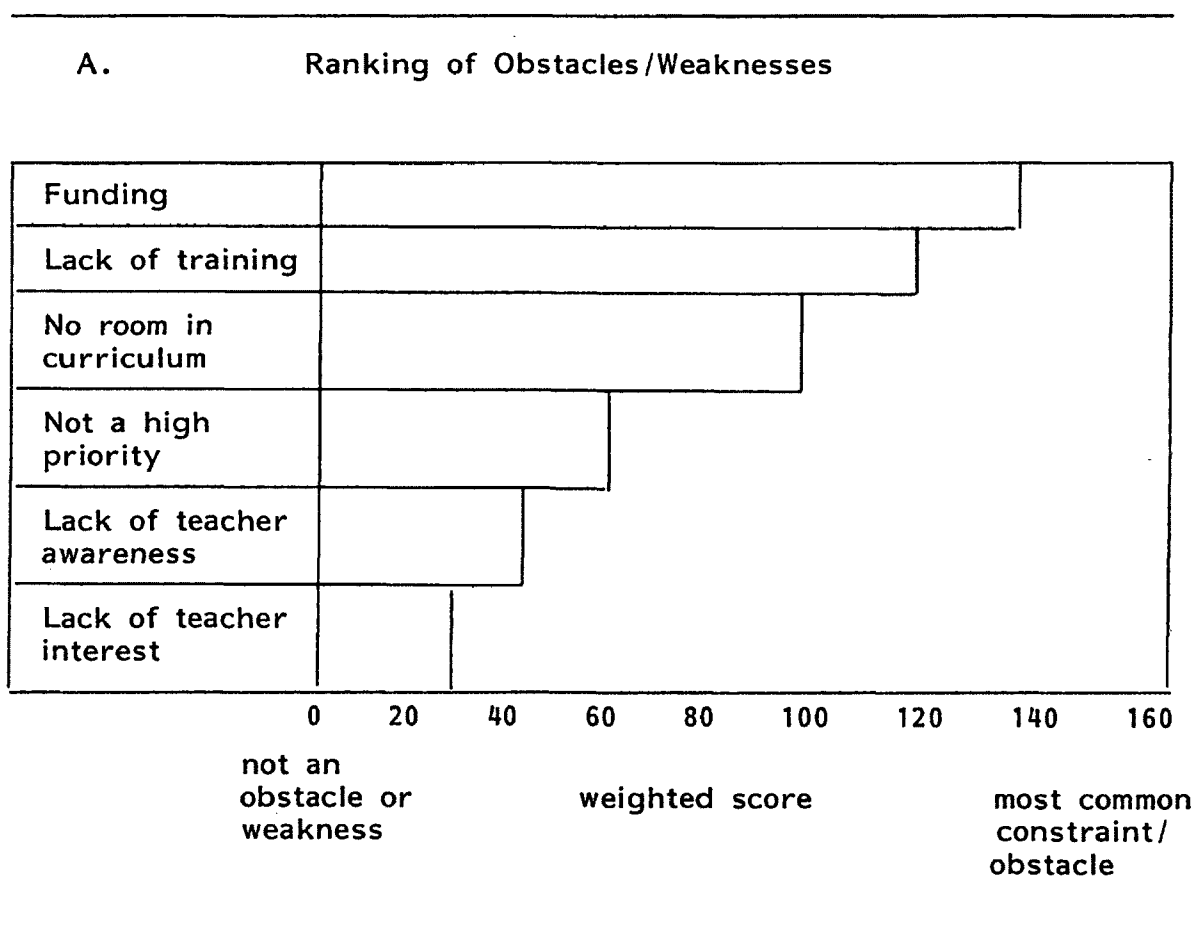
A.	
Proportion of Sources of Instructional Materials Used	
Materials from various resource agencies	84%
Combination of commercial and teacher prepared materials	62%
Materials developed by the teaching staff	49%
Textbooks representing two or more disciplines	40%
Materials provided by the state education agency	38%
Textbooks of one discipline	32%
A published outdoor education curricular program	16%
Materials developed by the school committee	4%
<hr/>	
B.	
Proportion of High School Principals Who Believe Their School has Adequate Facilities to Provide Environmental Education	
Yes, have adequate facilities	60%
No, do not have adequate facilities	40%

\* Totals from some items exceed 100% due to multiple responses

of environmental education. Survey participants were asked to select three and rank them one to three (one being the greatest constraint). Funding was selected the most often (25%) but lack of teacher training was selected nearly as frequently (24%). Fourteen percent of the administrators selected "not a high priority," and of those, 79 percent checked for teachers and 21 percent checked for administration. Using the weighted ranking score, the results were the same. Funding was ranked as the largest obstacle, followed by a lack of training, no room in curriculum and "not a high priority." Very low scores were given to "lack of teacher awareness" and "lack of teacher interest." Two respondents commented that increased curricular requirements were a constraint in the development of environmental education.



TABLE 8. TOP 3 OBSTACLES TOWARDS AND  
WEAKNESSES IN IMPLEMENTING  
ENVIRONMENTAL EDUCATION



B. Proportion of Obstacles or Weaknesses Identified by Administrators (who each chose 3)

Funding	25%
Lack of training	24%
No room in curriculum	20%
Not a high priority (79% for teachers; 21% for administration)	14%
Lack of teacher awareness	10%
Lack of teacher interest	7%

## CHAPTER FIVE

### Summary

In contrast to the enthusiastic beginnings of environmental education, in the early 1970s, the establishment and development of environmental education in public schools through the country has been very slow. Research has been done in the last two decades with the cumulative goal of establishing, improving, and expanding environmental education in the nation's public schools.

Much environmental education research has been concerned with determining the status of environmental education in public schools. (Disinger, 1986; Gundersun, 1989; McCaw, 1980; Pettus and Schwabb, 1979; Tewksbury and Harris, 1982; Tuller, 1989) This survey intended to determine the status of environmental education in the public high schools of the state of Montana, according to school principals and superintendents in the state of Montana.

The survey instrument for this study was based on three previous surveys done around the United States (Tewksbury and Harris, 1982; McCaw, 1990; Tuller, 1989). See chapter three for specific discussion about the survey instrument. The survey was sent to 170 high school administrators (principals and superintendents). One hundred and sixteen responded and those responses provided the survey population for the study. Responses to each of the 16 items were totaled. For items 1 and 2, percentage of response for each item was calculated

by using the number of responses for each item and the total number of returned and completed questionnaires. For all other items, the percentage of response for each item was calculated by either using the number of items circled, which varied when asked to "circle all that apply," or the total number of schools who responded that they did provide environmental education (82). Where respondents were asked to "circle all that apply," total percentages exceed 100 percent in those items. Respondents were asked to use a ranking scale on two items and a weighted score was applied to form a bar graph, as well as a percentage of response calculation.

It was the intent of this study to provide further information regarding the existence of environmental education and the characteristics of and attitudes towards its implementation within the state of Montana. The information gathered will add to the general body of knowledge on environmental education in Montana in the wake of a new resurgence of interest by educators and the general populace in environmental education.

The collective data from the survey results identifies the extent of environmental education in Montana, highlights some of the constraints in implementing environmental education and characterizes the planning, organization and instruction of environmental education in Montana public schools. The principle findings of this study also very

closely matched those of similar studies done in other areas of the United States (McCaw, 1980; Tewksbury and Harris, 1982; Tuller, 1989).

This study found that a majority of schools surveyed (71%) provided some sort of environmental education. Larger schools tended to be more likely to provide environmental education. However, 74 percent of those schools that reported providing environmental education indicated that the average student spends less than one hour per week on environmental education. Thirty two percent of those schools have environmental education as its own discipline or program, the other 68 percent incorporate environmental education into other disciplines, primarily science.

Ecology, pollution and energy problems are the most commonly emphasized concerns taught in environmental education, while ethical (man's stewardship of the earth) and economics of environmental practices are emphasized in less than half of those schools which teach environmental education. Of local and statewide environmental concerns, water pollution, air pollution, land use, wildlife issues and litter are all emphasized by at least 68 percent of the schools while wilderness and industrial issues are emphasized in 40 percent or fewer of the schools which do have environmental education. An awareness of environmental problems is promoted by more than half the schools in their environmental education programs while knowledge of current

action concerning environmental problems, ability to plan solutions, and ability to act in carrying out projects to alleviate problems are characteristics of less than 15 percent of schools providing environmental education.

Planning of environmental education in Montana public high schools is done mainly by science teachers and, according to additional comments by eight percent of the administrators, those teachers usually plan on their own, for their own classes, not interactively with other teachers. Very few schools report involving other agencies or institutions in either the planning or the teaching of environmental education. Most teachers in Montana who teach environmental education in public high schools are not formally trained (85%), and few schools require any pre-service (7%) or in-service (11%) training of any teachers. However, most administrators believe it is important to offer workshops in environmental concepts and principles to teachers.

Principals believe teachers would prefer an in-school workshop or conference above any other in-service training method. Most principals also cited additional lesson designs and teaching materials as the most desirable supplementary service (with consideration to time and cost). Most administrators (60%) do believe they have adequate facilities to provide environmental education.

This study found that environmental education ranked as

approximately the third priority among vocational education, consumer education, music, art, sports, and extracurricular clubs. Despite its relative priority to administrators, it is uncertain at this time whether students actually spend more time with environmental education than they do with the other activities considered to be of less priority by administrators in Montana.

A lack of funding was perceived by administrators as the greatest obstacle towards implementing environmental education in their schools. This was followed closely by a lack of training and no room in the curriculum. Tuller (1989) found a similar pattern. Tewksbury and Harris also found that while 73 percent of their survey population provided environmental education, the majority of students averaged less than one hour per week of classtime on environmental education. They suggested that the amount of time spent on environmental education would have to increase in order to effectively improve the level of environmental knowledge in public school students. They stated that the crux of the problem was that administrators tended to treat environmental studies as a separate subject matter which must compete with the more traditional subjects. In Montana, 21 percent of the administrators made comments to the effect that there was neither room in the curriculum nor time in the school day to incorporate environmental education into their programs.

### Conclusions

Environmental education does exist within the state of Montana and it shares many of the same characteristics of public school environmental education elsewhere in the United States. The majority of high schools in the state (71%) provide some sort of environmental education somewhere in their school programs. However, those students who do receive environmental education, spend very little time on it, usually less than one hour per week. In most cases, environmental education is loosely incorporated into science classes, comes from perhaps a chapter in the text devoted to ecology or environmental problems, and is rarely taught by someone trained in environmental education. The planning of environmental education is usually done by the teachers who teach it, for their own classes. Rarely does a public high school in Montana have a committee on environmental education, nor do they often involve the administration, parents, students or even professionally trained environmental educators, institutes or agencies.

Learning in environmental education in Montana public schools occurs mostly at the awareness and attitude stages and very little at the practical application levels of planning and problem solving of environmental problems and practices.

While several state and federal agencies offer workshops and conferences in environmental education for teachers, in-

service training is only required by a small fraction of Montana public high schools and few teachers take advantage of the training that is available in environmental education, according to state public school administrators. Administrators do believe formal training in environmental education is important, and they believe that a workshop offered indoors, on school grounds would be the type of in-service training for which most teachers would opt. Schools would generally prefer gaining access to additional teaching materials than to hiring outside help in teaching environmental education.

Though not extensively provided, environmental education appeared to be a strong priority as an addition to the "academic basics" in the high school curricula, for most administrators. The major constraint to the implementation of environmental education was reported to be a lack of funding, but a lack of teacher training and a lack of room in the curriculum were also indicated as obstacles.

While administrators reported that a lack of funding and a lack of room in the curriculum were the major obstacles, an extensive and appropriate environmental education program could be implemented state-wide, in every public high school without demanding any extra room in the curriculum and without requiring much extra funding. If a program was established that was multi-disciplinary where environmental education was incorporated into at least three and up to five



of the regular academic subject curricula, it would cost the school very little, if any additional funding and no extra time in the school day. It would, however, require a committee and the interest and dedication of the teachers involved. Ideally, each school eventually would construct a personalized environmental education program ensuring that each student receives a minimum of five hours per week of environmental education.

Though this survey included a universally accepted definition of environmental education, a more precise definition is needed indicating exactly what is to be expected of a school environmental education program. For example, it appeared through comments that several schools indicated "no", they did not provide environmental education, that it was merely included informally as part of their science curriculum. Other schools, with apparently the same type of program, reported "yes", they did provide environmental education but their survey responses indicated that it was merely informally incorporated into science classes. High school administrators seem to view environmental education as one of three different concepts: 1) an important topic to be covered in science class; 2) an academic area or activity that needs a separate curriculum; or; 3) an interdisciplinary field of study that should be incorporated across the academic curriculum with careful planning and monitoring. Prior studies have suggested that

emphasis should be placed on the later, either a multi-disciplinary or inter-disciplinary approach for planning and teaching. (Pettus and Schwabb, 1979; Tewksbury and Harris, 1982; Tuller, 1989) The implementation of environmental education probably will not increase if it is considered a subject area to be delivered separately from main academic content areas, given the overwhelming administrative response that funding and room in the curriculum are main obstacles.

A universally (state-wide) accepted written environmental education curriculum, either adopted by the state or schools individually would be beneficial to those schools desiring to implement an environmental education program. English teachers, for example, are often unaware of the vast opportunities to include environmental ethics, issues and projects into their lessons. The cost would be minimal, as well as would time constraints on teachers, and no extra space would be needed in the school's curriculum. There are several pre-packaged plans available to schools which wish to develop environmental education in their school programs (see Appendix E). As previously mentioned, the National Environmental Education Act will have grant applications available by July, 1991. There is also obviously a need, as indicated by a majority of administrators, for additional state funding for environmental education programs. This would guarantee at least partial funding and encourage further evaluation and

development of the state's environmental education program.

In an interview with Jack De golia, acting president of MEEA, he suggested that perhaps the word "environmental" is too controversial and creates "red flags" in the public school population when discussing environmental education. During the inception of MEEA, he received comments from several teachers; while they were supportive of the concept, either they, or they believed others, would be turned away by the term "environmental." (De golia, J., Personal Communication, March, 1991) Some states use terms such as "conservation education," or "nature studies." The results of this study actually indicated a positive reaction to the term "environmental education." The response rate was extremely high for a mail survey and 99 percent of comments were constructive and positive in nature. It has been the experience of this researcher that teacher attitudes change in a positive direction once they have been exposed to environmental education workshops, conferences or classes.

Past research suggested (Gundersun, 1989; Light, 1984) that there is little professional incentive for teachers to obtain either pre-or-in-service training in environmental education. Often teachers don't have any exposure to environmental issues, problems or environmental education. Elementary teachers are not required to have any environmental studies or environmental education courses, though they are offered at Montana colleges and universities.

With the exception of science teachers, high school teachers are often even more limited in their knowledge of the environment and its impending problems. Given the disastrous ecological state we are heading into, all teachers should be environmentally knowledgeable and literate, no matter what they teach, and have the tools to educate their students on environmental problems.

Montana Environmental Education Association and several other agencies and organizations are currently offering workshops and conferences on environmental education, as well as continuing education courses and summer workshops. These will be of great value to those attending and will add to the overall development of environmental education throughout the state. The carry-over of knowledge from these workshops into the classroom should be monitored and evaluated for their effectiveness with the goal of indicating the value of specific training in environmental education, teaching techniques, issues, and activities.

The findings of this study may also suggest that planning for environmental education in public schools will have to occur at the state education department level or at each school's administrative level in addition to those teachers involved in teaching EE, especially if an interdisciplinary approach is to be adopted.

Despite the apparent need for a clearer definition of environmental education, more concise planning and wide-

spread teacher training, environmental education does exist in the state of Montana. It remains a part of Montana public schools (at least of those who responded) without specific guidelines for its existence. The fact that it does exist, the fact that there was such a positive response to this survey, and the fact that administrators ranked EE as a high priority, even above sports, is a positive indication that administrators and teachers do value environmental education, they just aren't sure how to properly implement it. Sixty nine administrators requested the results of this survey, implying a serious interest in the topic. While earlier surveys (Jackson, 1974; Light, 1984) indicated that often administrators considered environmental education to be a low priority, this study implies a new trend that administrators as well as teachers would like to further promote environmental education in Montana public schools.

From the results and the researcher's interpretation of those results, the following recommendations can be made to implement a more extensive environmental education program in the public schools:

- 1. [Require for all teacher certification in Montana a course in environmental studies and a course in environmental education].
2. Establish a full time position in the Office of Public Instruction for an environmental education specialist.

3. Offer incentives for teachers to attend continuing education courses, workshops or conferences on environmental education. Suggestions for incentives; graduate credit; "free" days off from teaching, if offered during school; packaged lesson plans and teaching materials available free with attendance; school or OPI pays fee for attendance.
4. MEEA should work closely with OPI in their common efforts of expanding environmental education in Montana.
5. Acquire funding from the state, made available to public schools specifically for the use of environmental education.
6. Establish a state-wide curriculum and plan for implementation of environmental education (perhaps use Great Falls EE curriculum as a model).
- 7. [Encourage or require each individual school to have a plan of implementation plus a curriculum guide for environmental education. The guide should specifically identify where and how environmental education will be incorporated across the curriculum in at least three of the basic academic areas for each grade level and ensuring that each student receive a minimum of five hours per week in environmental education.]
- 8. [Require all teachers to participate in additional

environmental education training.]

9. Require that each student in either elementary or high school participate in a school sponsored wilderness-based outdoor education program (many counties require this in sixth grade).
10. Define the term environmental education in the context of a specific application for public schools. The definition should include a general description of the content of the curriculum, such as was used in this survey, plus references to the specific mode of implementation in the public school, how much time each student spends on EE and where, the materials used, the sources of those materials and reference to who plans and teaches the environmental education program. The term "Montana public school environmental education" will then have a very specific meaning and schools can easily identify whether they do or do not have EE and what parts they are lacking.

## **APPENDIX A: The Survey Instrument**



Ann Swisher Palen  
 C/O Environmental Studies Program  
 University of Montana  
 Missoula, Montana 59812  
 February 18, 1991

Code # \_\_\_\_\_

This is a busy time for public schools, but I would like to ask for your assistance. My name is Ann Swisher Palen. I am a graduate student in Environmental Studies at the University of Montana. For completion of my masters degree, I am conducting a survey on the status of environmental education in the public schools of Montana.

Environmental education is of growing concern to many educators. It is also a relatively new field and nationwide, its implementation and incorporation into the curriculum varies widely from state to state and school to school. Extensive surveys have been done in many states to answer such questions as: Are schools able to offer environmental education? To what extent? Have more current environmental concerns increased the offering of environmental education? Are public schools willing and what are the most appropriate methods for implementing environmental education and teacher training for the same? With your help, this survey intends to investigate these questions for the state of Montana.

Please find enclosed: a sixteen item survey. This survey was designed for principals to complete and is being sent to the principals of all public high schools in the state of Montana. The results of this survey may give you a chance to look at how your colleagues and other schools implement environmental education.

The questionnaire is brief and I hope you find it of interest. Please read carefully the introductory definition of environmental education. It will clarify the content of the questions.

I would sincerely appreciate receiving your survey as soon as possible so I may analyze the data by the end of March.

Thank you very much for the time that it takes you to complete the questionnaire. If you like, you may receive a summary of the responses at this project's completion.

Sincerely,

Ann Swisher Palen

Survey on the Status of Environmental Education in Public Schools in Montana.

Code # \_\_\_\_\_ (Please place the code number from your cover letter in this space. This is expressly for the purpose of monitoring response).

Before responding to the survey questions, please read the following definition of Environmental Education:

Environmental Education is the process of recognizing values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the inter-relatedness among man, his culture and his biophysical surroundings. It entails practice in decision-making and self-information of a code of behavior about issues concerning environmental quality. (Horn 1970)

#### DIRECTIONS

PLEASE CIRCLE THE APPROPRIATE ANSWER OR ANSWERS TO EACH QUESTION UNLESS INSTRUCTED OTHERWISE.

A survey on the status of environmental education in public schools in Montana.

Code # \_\_\_\_\_

Grade levels in school: (circle one)

K-12	8-12
------	------

6-12 9-12

7-12 10-12

Enrollment: 1-200 201-400 401-800 801-1200 1200 up

1. Does your school provide environmental education? Yes No  
If yes, please continue  
If no, please comment on whether or not you believe your school  
should provide environmental education and why you think it does  
not

Do not continue this survey. Thank you for sending your comments

2. At what grade levels in your school is environmental education taught?

3. How is your environmental education curriculum organized?
- a. disciplinary orientation
  - b. multi-disciplinary and/or interdisciplinary

4. Who is involved in planning environmental education in your school? (circle one or more)
- a. a consulting team
  - b. administrators
  - c. all teachers
  - d. some teachers
  - e. students
  - f. parents
  - g. other (please specify)

- 4a. If teachers are involved in the planning, please specify their fields: (circle all that apply)
- |                           |                       |
|---------------------------|-----------------------|
| a. science                | d. english            |
| b. social studies         | e. physical education |
| c. all teachers           | f. music or art       |
| g. other (please specify) |                       |

5. Approximately how much time does the average student spend per week on environmental education? (including field trips)
- less than an hour
  - 1-2 hours
  - 3-5 hours
  - more than 5 hours a week

6. Which of the following characteristics of environmental education is your environmental education program promoting?  
(circle all that apply)
- a. an attitude of concern for our place in the environment
  - b. awareness of environmental problems
  - c. knowledge of history and current action concerning these problems
  - d. ability to plan solutions to environmental problems
  - e. ability to act in carrying out projects to alleviate problems

7. What concerns are emphasized in environmental education at your school? (circle all that apply)
- a. interrelationships of all ecosystem components
  - b. other concepts of ecology
  - c. population education
  - d. energy problems
  - e. pollution and its relation to life style
  - f. economics of environmental practices
  - g. man's stewardship of the earth
  - h. other (please specify)

- 7a. What local and statewide environmental concerns are emphasized in environmental education at your school? (circle all that apply)
- |                       |                    |
|-----------------------|--------------------|
| 1. watershed issues   | 6. air pollution   |
| 2. land use (general) | 7. water pollution |
| 3. wildlife           | 8. landfills       |
| 4. wilderness         | 9. toxic wastes    |
| 5. industry           | 10. litter         |
8. Who teaches environmental education in your school? (circle all that apply)
- specialty hired environmental specialists
  - regular teachers
  - community citizens (please specify) \_\_\_\_\_
  - other (please specify) \_\_\_\_\_
9. If it is teachers who teach environmental education in your school, what is their primary professional preparation? (circle all that apply)
- |                   |                           |
|-------------------|---------------------------|
| a. science        | e. physical education     |
| b. social studies | f. music or art           |
| c. math           | g. other (please specify) |
| d. english        | _____                     |
- 9a. Teachers of environmental education have: (circle all that apply)
- been pretrained in environmental education
  - in-service training in environmental education
  - not been formally trained in environmental education
- 9b. Pre-service training in the teaching of environmental education is:
- required of all teachers
  - not required of any teachers
  - required of some teachers
- 9c. In-service training in the teaching of environmental education is:
- required of all teachers
  - not required of any teachers
  - required of some teachers
- 9d. Do you believe it is important to offer workshops to teachers in environmental concepts and principles?
- Yes                      No
10. What is your source of instructional materials for environmental education? (circle all that apply)
- textbooks of one discipline
  - textbooks representing two or more disciplines
  - materials provided by the state education agency
  - materials developed by the school committee
  - a published outdoor education curricular program
  - materials developed by the teaching staff
  - a combination of commercial and teacher prepared materials
  - materials from various resource agencies (i.e. Department of Fish, Wildlife and Parks)
  - other \_\_\_\_\_
11. In your opinion, does your school have adequate facilities to provide environmental education?
- Yes                      No

12. In-service opportunities are provided to school personnel, in regard to environmental education, in the following form: (circle all that apply)
- a. no opportunities are provided
  - b. by staff exchange
  - c. in staff meetings
  - d. by conferences
  - e. by workshops
  - f. by continuing education courses
  - g. by correspondence courses
  - h. by institutes
  - i. other (please specify) \_\_\_\_\_
- 
13. Rank the following according to how important you believe each is in a child's education. While all may be important, assume that there is not enough time or money to do all of them. What priority would you give each in relation to the other? (use a scale of 1-7 with 1=very important and 7=unimportant)
- |                               |  |
|-------------------------------|--|
| _____ Music Education         | _____ Extracurricular Clubs                  |
| _____ Art Education           | _____ Consumer Education                     |
| _____ Sports                  | _____ Vocational Education                   |
| _____ Environmental Education | _____ Other (please describe and rank) _____ |
- 
14. Please indicate which of the following in-service methods for training teachers in environmental education you would consider to be most desirable with consideration to perceived cost and time constraints. (circle all that apply)
- a. an in-school workshop or conference
  - b. an on-school grounds workshop conducted outdoors
  - c. a series of workshops held within the school
  - d. a series of workshops held on school property but conducted outdoors
  - e. a workshop held at another facility
  - f. a series of workshops held at another facility
  - g. other (please specify) \_\_\_\_\_
- 
15. Please indicate which of the following supplementary services for implementing environmental education in your school you would consider to be desirable with consideration to perceived cost and time constraints? (circle all that apply)
- a. additional lesson designs, teaching materials, and literature
  - b. trained environmental education professionals contracted from outside the school faculty who would provide classes and workshops for students in your school
  - c. trained environmental education professionals and a facility contracted for an intensive study away from school property
  - d. trained environmental education professionals and a facility contracted for a series of classes away from school property
  - e. other (please specify) \_\_\_\_\_
- 
16. What do you see as the greatest weaknesses in implementing environmental education in your school? Rank the top 3, 1 being the greatest weakness.
- a \_\_\_\_\_ funding
  - b \_\_\_\_\_ lack of teacher interest
  - c \_\_\_\_\_ a general lack of awareness by teachers
  - d \_\_\_\_\_ lack of specialized training
  - e \_\_\_\_\_ no room for it in curriculum
  - f \_\_\_\_\_ not a high priority
- (please check which applies if this item is ranked)
- \_\_\_\_\_ a. for teachers
  - \_\_\_\_\_ b. for administration
  - g \_\_\_\_\_ other (please specify) \_\_\_\_\_

THANK YOU FOR YOUR TIME AND EFFORT IN RESPONDING TO THIS QUESTIONNAIRE.  
DO YOU DESIRE A COPY OF THE RESULTS OF THIS STUDY? YES NO

## **APPENDIX B: Tewksbury and Harris Instrument**

**A SURVEY OF PUBLIC SCHOOLS ON THE STATUS  
OF ENVIRONMENTAL EDUCATION IN THE NORTH COUNTRY**

School name: \_\_\_\_\_

Town: \_\_\_\_\_

County: \_\_\_\_\_

GRADE LEVEL: (circle one) K-7      4-9      7-12.

ENROLLMENT: (circle one) 0-400    401-800    801-1200    1201 up

Please circle the appropriate answer(s).

1. Does your school provide environmental education? Yes No  
If no:

1a. If your school does not presently provide environmental education, is planning to incorporate it into your school curriculum within the next two years? Yes No

If yes: Please continue

2. At what grade level does environmental education begin in your school? \_\_\_\_\_

3. What grade levels in your school is environmental education taught? \_\_\_\_\_

4. How is your environmental education curriculum organized?

- a. disciplinary orientation
- b. cross-disciplinary
- c. multidisciplinary
- d. interdisciplinary

5. Who is involved in planning the environmental education in your school:

- a. a consulting team
- b. administrators
- c. all teachers
- d. some teachers
- e. students
- f. parents
- g. other (please specify) \_\_\_\_\_

5a. If some teachers are involved in the planning, please specify their fields:

- a. science
- b. social studies
- c. math
- d. english
- e. physical education
- f. music or art
- g. other (please specify) \_\_\_\_\_

6. Approximately how much time does the average student spend per week on environmental education?
  - a. less than an hour
  - b. 1-2 hours
  - c. 3-5 hours
  - d. more than 5 hours a week
7. What characteristics of responsible environmentalists is your environmental education promoting?
  - a. an attitude of concern for our place in the environment
  - b. awareness of environmental problems
  - c. knowledge of history and current action concerning these problems
  - d. ability to plan solutions to environmental problems
  - e. ability to act in carrying out projects to alleviate problems
8. What concerns are emphasized in your environmental education?
  - a. interrelationships of all ecosystem components
  - b. other concepts of ecology
  - c. population education
  - d. energy problems
  - e. pollution and its relation to lifestyle
  - f. economics of environmental practices
  - g. man's stewardship of the earth
  - h. other (please specify) \_\_\_\_\_
9. Who teaches environmental education in your school?
  - a. specially hired environmental specialists
  - b. regular teachers
  - c. community citizens
  - d. other (please specify) \_\_\_\_\_
10. What are the instructional strategies used in your environmental education?
  - a. material guides
  - b. audio visual aides
  - c. outdoor classroom exercises
  - d. class discussions
  - e. small group projects
  - f. computer assisted instruction
  - g. audio-tutorial learning
  - h. field trips/community resource visits
  - i. guest lecturers

- 10a. If it is teachers who teach environmental education in your school, what is their field?
- a. science
  - b. social studies
  - c. math
  - d. english
  - e. physical education
  - f. music or art
  - g. other (please specify)
- 10b. These teachers have:
- a. been pretrained in environmental education
  - b. in-service training in environmental education
  - c. not been trained in environmental education
- 10c. Pre-service training is:
- a. required of all teachers
  - b. not required of any teachers
  - c. required of some teachers
- 10d. In-service training is:
- a. required of all teachers
  - b. not required of any teachers
  - c. required of some teachers
- 10e. Do you feel it is important to train (teach) teachers environmental concepts and principles?      Yes      No
11. What is your source of instructional materials for environmental education?
- a. textbooks of one discipline
  - b. textbooks representing two or more disciplines
  - c. materials provided by the state education agency
  - d. materials developed by the school committee
  - e. a published environmental education curricular program
  - f. materials developed by the teaching staff
  - g. a combination of commercial and teacher prepared materials
  - h. materials from various resource agencies (i.e. DEC, APA)
12. In your opinion does your school have adequate facilities to provide a good quality environmental education?      Yes      No



13. Are in-service opportunities provided to school personnel in regard to environmental education?
- a. no opportunities are provided
  - b. in-service opportunities are provided by staff exchanges
  - c. in-service opportunities are provided in staff meetings
  - d. in-service opportunities are provided by conferences
  - e. in-service opportunities are provided by workshops
  - f. in-service opportunities are provided by continuing ed. courses
  - g. in-service opportunities are provided by correspondence courses
  - h. in-service opportunities are provided by institutes
  - i. other \_\_\_\_\_
14. What do you feel are the major constraints to the development of curriculum in environmental education?
- a. a lack of funding
  - b. lack of appropriate curriculum
  - c. lack of time to develop curriculum
  - d. insufficient room in the curriculum to add environmental education
  - e. lack of appropriate expertise
  - f. lack of acceptance by teachers
  - g. other (please specify) \_\_\_\_\_

## APPENDIX C: McCaw Instrument

1. Rate the following according to how important you believe each is in a child's education. While all may be important, assume that there is not enough time or money to do all of them. What priority would you give each in relation to the others? (1=Very important, 2=Quite important, 3=Moderate importance, 4=Not too important, and 5=Unimportant)
 

Music education	Extracurricular clubs
Art education	Consumer education
Sports	Vocational education
Environmental education	other (describe and rank)
2. How often do you take your class(es) outside the building to teach?
 

Never	Once a year	Twice a year
Three times a year	More than three times a year	
3. If you do go outside, what subject area(s) do you teach there?
 

Art	Physical Education	Social Studies
Environmental Education	Music	Science
Language Arts	Mathematics	
Other (please describe)		
4. What is your principal's attitude about teaching outside the building?
 

Strongly opposed	Discouraging	Neutral
Encouraging	Very encouraging	
5. How often do you take a study trip with your class?
 

Never	Once a year	Twice a year
Three times a year	More than three times a year	
6. Where do you taken them? Mostly outdoor areas \_\_\_\_\_  
Mostly indoor areas \_\_\_\_\_
7. Please indicate which of the following factors either prevent you from taking study trips or worry you greatly if you take them. (Put X's in the appropriate spaces.)
 

Problems getting transportation	_____
Hard to arrange with secondary students	_____
Availability of resource people	_____
Field trips are not that important	_____
Too much else to get done in your classroom	_____
Study trips not pertinent to the subject	_____
Not enough support from the system	_____
Not enough information about where to go	_____
Liability worries	_____
Your health	_____
Principal's attitude	_____
Other teachers' attitudes	_____
Safety of children	_____
The district cannot afford them	_____
Not enough places to go	_____
Other (please describe)	_____
8. Would you attend in-service teacher training in using the environment to teach if it were offered on your own time?
 

Definitely	Maybe	Probably not	No
------------	-------	--------------	----
9. Would you attend such in-service training if it were offered on school time?
 

Definitely	Maybe	Probably not	No
------------	-------	--------------	----

## **APPENDIX D: The Tuller Instrument**

1. Does your school provide environmental education?  
Yes                      No                      Don't know

If no:

- 1a. If your school does not presently provide environmental education, is it planning to incorporate it into your curriculum within the next two years?

Yes                      No

If yes: Please Continue

2. At what grade level does environmental education begin in your school? \_\_\_\_\_
3. At what grade levels in your school is environmental education used? \_\_\_\_\_
4. How is your environmental education curriculum organized?
- a. disciplinary orientation
  - b. cross-disciplinary
  - c. multi-disciplinary
  - d. interdisciplinary
5. Who is involved in planning environmental education in your school?
- a. a consulting team
  - b. administrators
  - c. all teachers
  - d. some teachers
  - e. students
  - f. parents
  - g. other (please specify) \_\_\_\_\_
- 
- 5a. If some teachers are involved in the planning, please specify their fields:
- |                   |                           |
|-------------------|---------------------------|
| a. science        | e. physical education     |
| b. social studies | f. music or art           |
| c. all teachers   | g. other (please specify) |
| d. english        | _____                     |
6. Approximately how much time does the average student spend per week on environmental education?
- a. less than an hour
  - b. 1-2 hours
  - c. 3-5 hours
  - d. more than 5 hours a week

7. Which of the following characteristics of environmental education is your environmental education program promoting?
- an attitude of concern for our place in the environment
  - awareness of environmental problems
  - knowledge of history and current action concerning these problems
  - ability to plan solutions to environmental problems
  - ability to act in carrying out projects to alleviate problems
8. What concerns are emphasized in environmental education at your school?
- interrelationships of all ecosystem components
  - other concepts of ecology
  - population education
  - energy problems
  - pollution and its relation to life style
  - economics of environmental practices
  - man's stewardship of the earth
  - other (please specify) \_\_\_\_\_
9. Who teaches environmental education in your school?
- specially hired environmental specialists
  - regular teachers
  - community citizens (please specify) \_\_\_\_\_
  - other (please specify) \_\_\_\_\_
10. What are the instructional strategies used in your environmental education?
- material guides
  - audio visual aides
  - outdoor classroom exercises
  - class discussions
  - small group projects
  - computer assisted instruction
  - audio-tutorial learning
  - field trips/community resource visits
  - guest lecturers
- 10a. If it is teachers who teach environmental education in your school, what is their primary professional preparation?
- science
  - social studies
  - math
  - english
  - physical education
  - music or art
  - other (please specify) \_\_\_\_\_

- 10b. Teachers of environmental education have:
- a. been pretrained in environmental education
  - b. in-service training in environmental education
  - c. not been trained in environmental education
- 10c. Pre-service training in the teaching of environmental education is:
- a. required of all teachers
  - b. not required of any teachers
  - c. required of some teachers
- 10d. In-service training in the teaching of environmental education is:
- a. required of all teachers
  - b. not required of any teachers
  - c. required of some teachers
- 10e. Do you feel it is important to workshop teachers in environmental concepts and principles?
- Yes                      No
11. What is your source of instructional materials for environmental education?
- a. textbooks of one discipline
  - b. textbooks representing two or more disciplines
  - c. materials provided by the state education agency
  - d. materials developed by the school committee
  - e. a published outdoor education curricular program
  - f. materials developed by the teaching staff
  - g. a combination of commercial and teacher prepared materials
  - h. materials from various resource agencies  
(i.e. DEC, APA)
12. In your opinion, does your school have adequate facilities to provide environmental education?
- Yes                      No
13. Are in-service opportunities provided to school personnel in regard to environmental education?
- a. no opportunities are provided
  - b. in-service opportunities are provided by staff exchanges
  - c. in-service opportunities are provided in staff meetings
  - d. in-service opportunities are provided by conferences
  - e. in-service opportunities are provided by workshops
  - f. in-service opportunities are provided by continuing education courses
  - g. in-service opportunities are provided by correspondence courses
  - h. in-service opportunities are provided by institutes
  - i. other (please specify) \_\_\_\_\_
- 
-

14. What do you feel are the major constraints to the development of curriculum in environmental education?
- a lack of funding
  - lack of appropriate curriculum
  - lack of time to develop curriculum
  - insufficient room in the curriculum to add environmental education
  - lack of appropriate expertise
  - lack of acceptance by teachers
  - other (please specify) \_\_\_\_\_
- 
15. Rate the following according to how important you believe each is in a child's education. While all may be important, assume that there is not enough time or money to do all of them. What priority would you give each in relation to the other? (Use a scale of 1-5 with 1=very important and 5=unimportant.)
- |                                       |                             |
|---------------------------------------|-----------------------------|
| _____ Music Education                 | _____ Extracurricular clubs |
| _____ Art Education                   | _____ Consumer Education    |
| _____ Sports                          | _____ Vocational Education  |
| _____ Environmental Education         |                             |
| _____ Other (describe and rank) _____ |                             |
- 
16. Do you believe that there are teachers in your school who would attend in-service training in environmental education if it were offered on personal time and paid for by the school?
- definitely
  - maybe
  - probably not
  - no
17. Do you believe that there are teachers in your school who would attend in-service training in environmental education if it were offered on school time?
- definitely
  - maybe
  - probably not
  - no
18. Please indicate which of the following in-service methods for training teachers concerning environmental education would you consider to be most desirable with consideration to perceived cost and time constraints.
- an in-school workshop or conference
  - an on school grounds workshop conducted outdoors
  - a series of workshops held within the school
  - a series of workshops held on school grounds but conducted outdoors
  - a workshop held at another facility
  - a series of workshops held at another facility
  - other (please specify) \_\_\_\_\_



19. Please indicate which of the following supplementary services for implementing environmental education in your school would you consider to be most desirable with consideration to perceived cost and time constraints?
- a. additional lesson designs, teaching materials and literature
  - b. trained environmental education professionals contracted from outside the school faculty who would provide classes or workshops for students on your school property
  - c. trained environmental education professionals and a facility contracted for and intensive study away from school property
  - d. trained environmental education professionals and a facility contracted for a series of classes away from school property
  - e. other (please specify) \_\_\_\_\_
- 

Thank you for your time and effort in responding to this questionnaire.

Do you desire a copy of the results of this study?

YES

NO

## **APPENDIX E: Suggested Resources**

### Suggested Resources

#### Environmental Education Resources in Montana:

National Bison Range teacher workshops  
Marie Bishop, Moiese, MT 644-2211

Lee Metcalf National Wildlife Refuge teacher workshops  
Contact: Beth Underwood, 777-5552

Project WILD/Aquatic WILD workshops  
Kurt Cunningham, State Project WILD Coordinator  
(404) 444-1267, Helena, MT.

United States Forest Service Environmental Education Program  
at:  
Lolo National Forest  
Contact: Sue Reel, (406) 329-3831

Kari Gundersun, Environmental Consultant  
Box 1008, Condon, MT 59826

Montana Environmental Education Association  
Box 928, Dillon, MT 59725 Contact: Jack De golia

Montana Project Learning Tree  
208 North Montana Avenue  
Suite 104, Helena, MT 59601 Contact: Kathy Anderson

Birch Creek Nature Center  
Western Montana College, Office of Continuing Education,  
683-7537

Montana Wilderness Association  
P.O. Box 635, Helena, MT 59624  
(406) 443-7350

Montana Natural Resources Youth Camp  
1753 Moffitt Gulch Road  
Bozeman, MT 59715  
(406) 587-7198

Conservation Education Resource Directory  
Department of Natural Resources  
Helena, MT 59624 Contact: Joan Schumaker (406) 444-6781

Montana State Department of Fish, Wildlife and Parks  
1420 E. Sixth Avenue, Helena, MT 59624  
Contact: Kurt Cunningham  
Curriculum guide available

### Suggested Resources cont.

The Glacier Institute (courses and workshops)  
P.O. Box 1457 B, Kalispell, MT 59903  
Contact: Ursula Mattson (406) 756-3911

The Yellowstone Institute (courses and workshops)  
P.O. Box 117, Yellowstone Park, WY 82190  
(307) 344-7381

Environmental Education Workshop  
Custer, National Forest, Billings, MT.  
Contact: Dr. Will Clark (406) 657-6361

### For curriculum development:

Environmental Education Leadership Development Project  
The College of Applied Sciences  
Governors State University  
Park Forest South, IL 60466

National Wildlife Federation  
Teachers kit, "Fragile Frontiers, the Ends of the Earth"  
1400 7th Street, NW  
Washington, D.C. 20036-2266

The Nature Conservancy's Student Stewardship Program  
Teacher's Manual (conservation education activities for high school) by Institute for Environmental Education, Cleveland, OH, The Nature Conservancy, 1800 North Kent Street, Arlington, VA 22209

Environmental Education K-12  
Great Falls and Great Falls Public Schools  
Janet Thompson (available through Eric)

The early lilacs became part of this child,  
and grass and white and red morning-glories...

- Walt Whitman

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